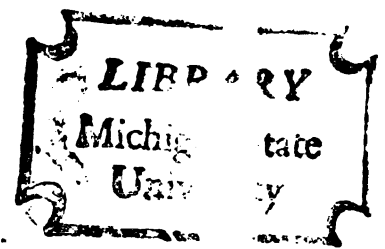


**IMAGERY IN VERTICAL
DISTRIBUTION CHANNEL
STRUCTURE: AN EMPIRICAL
INVESTIGATION OF STEEL
SERVICE CENTER IMAGES**

Thesis for the Degree of Ph. D.
MICHIGAN STATE UNIVERSITY
PETER MYLES BANTING
1971

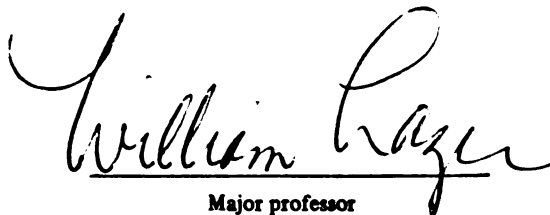


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IMAGERY IN VERTICAL DISTRIBUTION CHANNEL STRUCTURE:
AN EMPIRICAL INVESTIGATION OF STEEL SERVICE
CENTER IMAGES

presented by
Peter Myles Banting

has been accepted towards fulfillment
of the requirements for

Ph.D. degree in Marketing


Major professor

Date January 11, 1971

ABSTRACT

IMAGERY IN VERTICAL DISTRIBUTION CHANNEL STRUCTURE: AN EMPIRICAL INVESTIGATION OF STEEL SERVICE CENTER IMAGES

by

Peter Myles Banting

This thesis examines the images projected by United States steel service centers as they are perceived by basic steel mills, by the steel service centers themselves, and by the customers who buy from steel service centers. Similarities between the image steel service centers project and the images perceived by customers and basic mills are identified; key elements considered most representative of elements in the image spectrum, ranging from unfavorable to favorable, are isolated; a basic operational tool for image measurement by steel service centers is developed; areas of greatest opportunity for steel service center image improvement are identified; and the relationship between

the image projected by steel service centers and the profits they earn is tested.

In this study an image is defined as a composite of many evaluative elements, generated by all associations with the firm and abstracted into an independent final stable impression whose meaning is mediated by the individual's values and biases.

The research was conducted using a mail questionnaire incorporating forty-four semantic differential scales of image elements to evaluate the ideal steel service center, an identical set of forty-four scales to evaluate the actual steel service center, and eight scales to evaluate the relative importance of various image elements. Comparison of ideal and actual mean values on each of the forty-four scales provided a measurement of image congruity. Factor analysis of the variables indicated their conceptual associations in the views of the respondents. Multivariate regression of all the variables yielded a basic incongruity index consisting of six variables for the customers, seven

variables for steel service centers, and seven variables for the basic mills, which could be used to represent the information contained in the ninety-six variable questionnaire.

Areas offering greatest opportunity for image improvement by steel service centers included management and planning, product quality, inventory position, communication of credit policies, delivery, product- and problem-oriented advertising, and sales management. Factor analysis indicated basic mills have a marketing channel orientation, steel service centers are sales oriented, and customers concentrate on immediate day-to-day problems. No relationship could be found between steel service center images and the profits they earn. The study recommends a number of areas in which further research might be undertaken.

IMAGERY IN VERTICAL DISTRIBUTION CHANNEL
STRUCTURE: AN EMPIRICAL INVESTIGATION OF
STEEL SERVICE CENTER IMAGES

by

Peter Myles Banting

A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Marketing and Transportation
Administration

1971

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1971

ACKNOWLEDGMENTS

The inspiration, encouragement, cooperation and assistance of many people contributed to this dissertation. My gratitude to them extends beyond that which can be acknowledged here.

My dissertation committee, chaired by my faculty advisor, Dr. William Lazer, was outstanding in objective, constructive guidance and personal encouragement. The example set by Dr. Lazer's penetrating counsel has sharpened my awareness of the need for precision. Dr. William J.E. Crissy's advice helped me immeasurably in resolving the numerous vexing problems in data gathering and analysis. It is of great regret to me that Professor W. Lloyd Warner, who provided a pre-doctoral grant toward this study, did not live to see its completion. I am grateful to Dr. Donald Taylor, who replaced Professor Warner on my committee.

The education committee of the Steel Service Center Institute provided generous financial support for this study. This work was considerably enhanced by the assistance of Mr. Robert Welch, President of the Steel Service Center Institute, who encouraged SSCI members to participate, and who offered helpful advice and criticism of the manuscript. My thanks also extend to those basic mill executives, steel service center executives, and steel buyers who participated in this study as respondents.

At McMaster University, I was assisted by Dr. Paul Swingle and Dr. David Streiner, who introduced me to the complexities of factor analysis, and by Dr. M.L. Tiku, who guided my use of multivariate regression techniques. Miss Diana Szymaszek cheerfully developed new programs and modified library programs for my use at the McMaster Computing Centre. Special thanks are owed to Dr. Isaiah Litvak, who inspired me to pursue a career in Marketing. Miss Beverley Carruthers not only spent many hours typing the manuscript, but also joined with my parents in encouraging me.

The time, encouragement and support these people have given so generously, places me in their debt. I sincerely hope that my work, in some way, will repay that debt.

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CHAPTER ONE

THE RESEARCH PROBLEM AND METHODOLOGY

INTRODUCTION

The concept of image has been studied, discussed and utilized by psychologists, philosophers, government officials and businessmen for many years. Some studies date back more than a hundred years. "Even a cursory survey of the psychological literature reveals that there was a good deal of attention to images of all kinds during the first flowering of scientific psychology before and around the turn of the twentieth century."¹

Political candidates, and even a national women's organization are concerned about their images. "The image of United States foreign policy has become no less important than the objective political, military, and economic realities. In

¹Holt, Robert R., "Imagery: The Return of the Ostracized," American Psychologist, 19 (March, 1964), p. 255.

certain instances, it would be perhaps not too much to say that the image has become, indeed, the most important element."²

Image is no less important to the businessman. Every business, no matter how big or small, projects its own distinctive image to the many and various groups with whom it comes into contact.

"There are few business enterprises today without some sort of image they can claim exclusively. There are no successful corporations in existence without it. Even small organizations have images."³ The image a company projects may attract some customers, while repelling other potential customers.

"Probably one of the greatest obstacles to gaining a positive reaction on the part of potential customers is an unfortunate or debilitating total image of a company or corporation

²Crespi, Leo P. "Some Observations on the Concept of Image," Public Opinion Quarterly, 25 (April, 1961), p. 116.

³Baker, Stephen, "The Art of Building a Corporate Identity," Public Relations Journal, 18 (January, 1962), p. 16.

in the mind of the public. No matter how much money is spent on advertising and public relations and other forms of marketing strategy, the products of that company will not be seriously considered by an alienated consumer. This overriding image carries forward to every element of a company's activities."⁴

To different people, the concept of image assumes different meanings. Yet every meaning contains a common element: the image is a mental representation of some aspect of reality. To the businessman, this reality is usually a product, a brand, or the entire corporation.

The image projected by a particular firm and its products is significant because of its influence in appealing to or repelling potential customers. Of crucial importance is the number and type of customers attracted to the firm. This can be seen in the way marketing is defined:

"Marketing is the analyzing, organizing, planning

⁴Heidingsfield, Myron S., "Building the Image--An Essential Marketing Stratagem," New Directions in Marketing, F.S. Webster, editor, Chicago: American Marketing Association, June, 1965, p. 134.

and controlling of the firm's customer-impinging resources, policies, and activities with a view to satisfying the needs and wants of chosen customer groups at a profit."⁵

Customer selection is not haphazard. The marketer must determine the type and number of customers to whom he wishes to appeal. They become his chosen customer group. He then attempts to satisfy their needs and wants as fully as possible within the constraints set by his profit objectives. Included in his customers' needs and wants is the desire to deal with a specific type of firm. The characteristics of this firm may not be clearly defined, but nevertheless represent an image of the "ideal" firm with which they would like to do business. One of the marketer's functions is to make his company approximate this "ideal" image, within the constraint of profitability. Thus, rather than simply allowing a firm's image to position itself,

⁵Kotler, Philip, Marketing Management, Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1967, p. 12.

one of the priorities of the company's chief executives should be the effective management of corporate image.

This dissertation will examine the image presented by steel service centers, and attempt to isolate the critical elements of image which best lend themselves to manipulation by management.

BASIC ASSUMPTIONS

In this dissertation, corporate image will be defined as a composite of many evaluative elements, generated by all associations with the firm and abstracted into an independent final stable impression whose meaning has been mediated by the individual's values and biases.

Although most studies report the corporate image from the perspective of the customer, it is important for the distributor or middleman to know what image he projects not only to his customer, but also to his supplier; for the distributor wishes sustained allegiance from both, and continually

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faces "the threat of potential competition from either end of the channel."⁶ Thus, the wise middleman "must avoid looking at problems strictly from the horizontal viewpoint of his particular stratum of distribution; he must be aware of the vertical viewpoint, i.e., the manufacturer at the top and the consumer at the bottom, each striving to make his own best bargain."⁷ To obtain maximum long-run profits, the channel must operate as a unit, minimizing conflicts and maximizing cooperation.⁸ For the middleman, image research back in

⁶Alderson, Wroe, Dynamic Marketing Behavior, Homewood: Richard D. Irwin, Inc., 1965, p. 41.

⁷McNair, Malcolm P., "Significant Trends and Developments in the Postwar Period," Managerial Marketing, Lazer, William and Kelly, Eugene J., (eds.), Homewood: Richard D. Irwin, Inc., 1962, p. 501.

⁸Mallen, Bruce, "A Theory of Retailer-Supplier Conflict, Control and Cooperation," Journal of Retailing, 39 (Summer, 1963), pp. 24-32, 51.

Ridgeway, Valentine F., "Administration of Manufacturer-Dealer Systems," Managerial Marketing, op. cit., pp. 479-482.

Worthing, Parker Martin, "An Analysis of Perceived Competitive Advantages within Selected Manufacturer-Distributor Alignments," (unpublished Ph.D. dissertation, Michigan State University, 1968).

the channel to his supplier, as well as forward to the customer, can provide information which will help him foster a cooperative relationship.

This research study is designed to provide information about the middleman's image viewed from both ends of the channel of distribution. An attempt is made to appraise the actual image of the distributive firm in comparison to a standard represented by the viewer's concept of the ideal image the distributor should have. Two assumptions permeating this study are that:

- 1) A firm may win greater support and loyalty from its customers, hence differential competitive advantage over competitors, by achieving compatibility between the image the firm projects and the image customers desire.
- 2) A firm may win greater support and loyalty from its supplier by achieving compatibility between the image it projects and the image the supplier desires.

THE RESEARCH PROBLEM

The overall research problem is to ascertain the image of steel service centers within the vertical channel of distribution for steel. Inherent in this problem are four principal areas of concern, or sub-problems:

- a) Is the image a distributor desires to project misinterpreted by other members of the channel because a diversity of influences impinge upon perceptions of image?
- b) Given the complex composition of an image, can the elements of an image which are most significant be determined?
- c) Can the usual long, involved and expensive image studies be simplified?
- d) Does action to improve images yield tangible positive results for distributors?

This research study tests five hypotheses:

- 1) That there are areas of similarity between the image distributors think they project, and the images perceived by customers and suppliers.
- 2) That some key elements in the total composite of image elements are more representative of the favorable-unfavorable image spectrum than others.
- 3) That a basic operational tool for image measurement can be developed for use by businessmen.
- 4) That certain areas offer the greatest opportunity for image improvement by distributive middlemen.
- 5) That there is a relationship between the image distributors project and the profits they earn.

THE POPULATION AND SAMPLE

To delimit the study, the membership of the Steel Service Center Institute was chosen for investigation. Approximately 20 per cent of the basic mills' steel output in the United States is handled through steel distributors--the steel service centers. A steel service center may be defined as an industrial distributor which facilitates the flow of steel from basic mill to end user. The steel service center carries an inventory of plates, bars, sheets, strips, and structural shapes, plus many related items. The firm's prime raison d'être is to group customers' orders, too small for economical handling by basic mills, and buy in larger lots from the steel mills. In addition, the steel service center provides certain pre-production services such as cutting, burning, slitting, shearing, levelling, pickling, grinding, edging, etc.; extends credit; offers technical information and assistance to customers; and provides rapid delivery, frequently for large customer orders which mills cannot deliver due to scheduling requirements.

As a marketing intermediary, the steel service center performs two roles: acting as the marketing arm of the basic mills on the one hand, and as the purchasing arm of its customers on the other. In 1969, domestic shipments to steel service centers accounted for 17.5 million tons of steel--nineteen per cent of the total steel production of the United States.⁹ This was nearly double the proportion of domestic output enjoyed by steel distributors thirty-five years ago. Most of the industrial steel service centers in the United States belong to the Steel Service Center Institute.¹⁰ The membership roster of this association constitutes the population of this study.

Three groups of respondents were sampled to provide a comprehensive view of images perceived throughout the channel of distribution for steel.

⁹1970-71 Roster of Members, Cleveland: Steel Service Center Institute, p. 4.

¹⁰Ibid., p. 5.

1) MILL SAMPLE: To generate data concerning images of steel service centers held at the manufacturers' level, two sub-groups of mills were selected. The first sub-group consisted of the ten largest basic integrated mills in the United States. This non-probability sample was chosen because these ten mills account for the bulk of steel tonnage produced in the United States. The second sub-group was a judgment sample of eleven smaller specialized mills selected by Robert G. Welch and John E. Doxsey, respectively President and Executive Secretary of the Steel Service Center Institute. These eleven mills were chosen because they were considered to be most representative of the diversified mix of small specialized mills from which steel service centers purchase materials. The members of the sample chosen were:

Big 10

1. United States Steel Corporation
2. Bethlehem Steel Corporation
3. Republic Steel Corporation
4. National Steel Corporation

5. Armco Steel Corporation
6. Jones and Laughlin Steel Corporation
7. Inland Steel Company
8. Youngstown Sheet and Tube Company
9. Wheeling-Pittsburgh Steel Corporation
10. Kaiser Steel Corporation

Specialized 11

1. The Babcock & Wilcox Company
2. Bliss & Laughlin Steel Company
3. Copperweld Steel - Bar Division
4. Eastern Stainless Steel Company
5. LaSalle Steel Company
6. Michigan Seamless Tube Company
7. North Star Steel Company
8. Pacific Tube Company
9. The Timken Roller Bearing Company
10. Universal-Cyclops Specialty Steel Division
11. Washington Steel Corporation

At each mill, the top executive responsible for steel service centers was sent a package of six questionnaires. He was requested to respond to one

and return it. He was asked to select five outside mill representatives in the field who were most seasoned in dealing with steel service centers and request that they independently fill in and return one questionnaire each.

2) STEEL SERVICE CENTER SAMPLE: At the inception of the research, the Steel Service Center Institute provided their total most up-to-date mailing list of active members, alphabetically arrayed. Using a randomly selected starting point, a systematic one-third sample of the population was drawn. In total, 391 steel service centers participated in the sample, representing all types of steel distributors, all regions of the country, and serving all classes of customers.

At each steel service center, the top executive was sent a package of six questionnaires. He was requested to respond to one and return it. He was asked to distribute the other questionnaires to five members of his executive group and request that they independently complete and return one questionnaire each. It was recognized that some steel service

centers would have less than five in the executive group.

3) CUSTOMER SAMPLE: The top executive of each steel service center was also asked to return a list of ten representative customers of his firm. Furthermore, he was asked for permission to use the name of his firm when these customers were contacted. Alternatively, if permission were not granted, he was assured anonymity. Care was taken to explain that this self-generated judgment sample of customers should be as representative as possible of the steel service center's customer mix.

THE RESEARCH INSTRUMENT

Meaning can be denotative or connotative. Denotative meaning is constant among people. It designates an object. Thus the word "steel" signifies a metal of known characteristics, including carbon content, ductility, color, and so on, to anyone who has experienced it, and is never confused with or mistaken for copper.

Connotative meaning has; 1) different meanings among people, developed through all their experiences with the object, and 2) variable meaning over time, based upon their most recent experiences with it. One person may consider the appearance of steel pleasing, another distasteful. A person may feel favorably inclined toward using steel in fabrication, then change his opinion after a bad production run. The connotative meaning is made of emotions, ideas, and images.¹¹

The device originally conceived by Charles Osgood for measuring connotative meanings is the semantic differential.¹² It measures the connotative meaning of a concept in a multidimensional semantic space. The semantic differential consists of a number of bipolar descriptive (usually adjective) scales against which a concept is evaluated. Pairs

¹¹Gatty, Ronald, and Allais, Claude, The Semantic Differential Applied to Image Research, New Brunswick, N.J.: Department of Agricultural Economics, Rutgers University, (no date), pp. 4-6.

¹²Osgood, Charles E., "The Nature and Measurement of Meaning," Psychological Bulletin, 49 (May, 1952), pp. 197-237.

of polar descriptions (or adjectives) are usually separated by a seven-interval scale (although more or fewer intervals may be used). Respondents select the point on each interval scale that most closely indicates their feelings or attitudes about the concept along the scaled dimension.

Because the specific elements of connotative meanings are often quite abstract and extremely difficult to express, the use of a projective technique can be very helpful to the researcher. The semantic differential fills this role admirably,¹³ and has enjoyed unmatched popularity.¹⁴ Among many other things, it is useful in measuring differences in the way customer groups view a firm, in identifying

¹³Kelly, Robert F., and Stephenson, Ronald, "The Semantic Differential: An Information Source for Designing Retail Patronage Appeals," Journal of Marketing, 31 (October, 1967), p. 47.

¹⁴Green, Paul E., and Tull, Donald S., Research for Marketing Decisions, Englewood Cliffs: Prentice-Hall, Inc., 1966, p. 202.

Carter, Richard F., Ruggels, W. Lee, and Chaffee, Stephen H., "The Semantic Differential in Opinion Measurement," Public Opinion Quarterly, 32 (Winter, 1968-1969), p. 666.

merchandising characteristics that are important to a target customer group, in identifying variables on which customers are basing their choices among competing outlets,¹⁵ in comparing corporate images, both among suppliers, and against an "ideal" or standard image of what the respondents think a company should be, in comparing products and services of competing firms, in determining attitudinal characteristics of purchasers, in analysing effectiveness of promotion on attitude change,¹⁶ in indicating where the firm and its competitors fall short in meeting customer expectations, and in providing information about how to attract and keep customers who continually shift from one supplier to another.¹⁷

¹⁵Stephenson, P. Ronald, "Identifying Determinants of Retail Patronage," Journal of Marketing, 33 (July, 1969), p. 61.

¹⁶Green and Tull, loc. cit.

¹⁷Kelly and Stephenson, op. cit., p. 43.

As a research technique, the semantic differential is a quick and efficient quantifiable measure of opinions and attitudes, provides a comprehensive picture of image, offers a standardized technique for measuring image factors, is easily repeatable and quite reliable, avoids stereotyped responses and allows individual frames of reference, and eliminates ambiguity and overlapping statements.¹⁸ Among its many advantages are ease and speed of administration, manifest numerical equivalences, reliability, sensitivity, versatility, and the fact it has passed a number of reliability tests.¹⁹ Its speed ranges between three and six seconds per scale, and even less as the number of scales increases.²⁰

¹⁸Mindak, William A., "Fitting the Semantic Differential to the Marketing Problem," Journal of Marketing, 25 (April, 1961), pp. 28, 29.

¹⁹Carter, Ruggels, and Chaffee, loc. cit.

²⁰Gatty and Allais, op. cit., p. 17.

The semantic differential does have several limitations. It may not distinguish small enough differences in attitude. A halo effect may bias all attributes scaled if the respondent has a strong feeling about a particular attribute. And a one-to-one relationship between attitudes and patronage behavior cannot be expected.²¹ Mathematical operations on scale data rest on assumptions of equal intervals within a scale, equal intervals between scales, and similar placement of origins across scales. However, research findings indicate that these are not unrealistic assumptions, and more than simply assumptions.²² The semantic differential "is a valid indicator

²¹Kelly and Stephenson, op. cit., p. 47.

²²Messick, Samuel J., "Metric Properties of the Semantic Differential," Educational and Psychological Measurement, 17 (Summer, 1957), p. 206.

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of brand attitudes as inferred from purchasing behavior."²³ It has been favorably evaluated against the criteria of objectivity, reliability, validity, sensitivity, comparability, and utility.²⁴

To improve the effectiveness of the semantic differential, several researchers have suggested modifications of Osgood's original structure. ^{For example,} Greater sensitivity to subtle distinctions in image may be obtained by using: 1) descriptive nouns and phrases, instead of just adjectives; 2) tailor-made scales rather than standardized lists resulting from Osgood's thesaurus search; 3) "connotative" and "non-polar" opposites; 4) built-in control concepts, such as "the ideal company;" and 5) mail questionnaires rather than administration in personal interviews.²⁵ The mail questionnaire is considered

²³Barclay, William D., "The Semantic Differential as an Index of Brand Attitude", Journal of Advertising Research, 4 (March, 1964), p. 33.

²⁴Osgood, op. cit., pp. 230, 231.

²⁵Mindak, op. cit., pp. 29, 30.
Kelly and Stephenson, op. cit., p. 44.

a "superior" method because it avoids interviewer bias and is cheaper.²⁶

In summary, the semantic differential offers numerous advantages and very few disadvantages to the image researcher. Thus this technique was chosen to measure the connotative meaning of steel service centers.

PRELIMINARY STUDY

In January, 1969 a preliminary study was conducted to test the semantic differential technique as an image measurement instrument and to identify appropriate bipolar scales for later research. The test was carried out with participants at the Steel Service Center Institute's Management Seminar at Michigan State University. Two sets of questionnaires with different scale sequence and order were used to avoid biases. Although the sample was small (only 47 respondents), valuable results were obtained. The scales did

²⁶Berry, Leonard L., "The Components of Department Store Image: A Theoretical and Empirical Analysis," Journal of Retailing, 45 (Spring, 1969), p. 13.

differentiate between "ideal" and "actual" images of steel service centers. Personal in-depth interviews with 12 of the respondents aided in clarifying the scale statements and modifying the instrument.

The results of the preliminary study led to revision and elimination of many of the scales, and suggested that eight major categories for building a composite image of steel service centers would be satisfactory. These categories are:

- Organization
- Management
- Products
- Inventory
- Credit and Delivery
- Prices
- Advertising
- Salesmen.

The research instrument used in this study is a modification of Osgood's original format for the semantic differential, incorporating many of the refinements outlined in the preceding section. A seven-interval scale is used, the intervals from

one extreme to the other identified as: Disagree Strongly, Disagree Moderately, Disagree Slightly, Neither Agree Nor Disagree, Agree Slightly, Agree Moderately, Agree Strongly. The verbal format has been shown to be preferred to a non-verbal format when the investigator plans to view his results in other than relative terms, and when respondents are not adept at abstractions.²⁷ In addition, each interval is numbered 1 to 7 respectively with a headnote reminder--"Note: the higher the number, the more you agree."

To increase speed of administration, the scales are identified descriptively at one extreme only, and the other extreme of the bipolar rating is in most cases inferred. In addition to the descriptive adjectives such as "large--small,"

²⁷Wells, William D., and Smith, Georgianna, "Four Semantic Rating Scales Compared," Journal of Applied Psychology, 44 (December, 1960), p. 397.

connotative phrases such as "plans thoroughly for the future" are used.²⁸

The previously mentioned eight major categories contain 44 semantic differential scales. The built-in control concept of an "ideal" steel service center is used for comparative purposes with the "actual" steel service center image.²⁹

The physical research instrument is an eight-page mail questionnaire, divided into four parts. The first page contains instructions to respondents, and a seven-digit identification code. Part One contains the 44 scales against which the "ideal" steel service center is evaluated. Part Two repeats the same 44 scales, this time rating the "actual" steel service center. Part Three uses eight semantic differential scales with polar descriptions "unimportant--important" to rate the eight major categories under which the 88 preceding scales

²⁸Mindak, op. cit., p. 30.

²⁹Ibid.

have been classified. Part Four contains several classification questions concerning the respondent.

Three sets of questionnaires were used to assess steel service center image as viewed by the three samples of respondents. They were identical except for the classification questions in Part Four, and were color-coded for ease in mailing, sorting, etc. The mill set is green; the steel service center set, pink; and the customer set, white. Sample questionnaires appear in Appendix B.

RESEARCH IMPLEMENTATION

Two waves of mailings were made. The initial mailing went to 21 mills and 391 steel service centers, each packet containing six questionnaires, with the steel service center set also containing a reply form for the customer list. A sample customer list reply form appears in Appendix C.

The first wave was mailed between November 6 and 10, 1969. Each packet contained six self-addressed, stamped, reply envelopes. Postage stamps

were used in all mailings and reply envelopes, rather than metered postal permits, to increase the rate of return.³⁰ In addition, the covering letter was personally addressed to the respondent, rather than "Dear Sir," and was signed by hand in ink. Samples of covering letters appear in Appendix A.

Due to the Christmas mail rush, the second wave was delayed until after the holiday season. Between January 9 and 11, the second wave of identical packets was mailed to sample members who had not responded, with a covering letter urging their participation. To break down psychological barriers or resentment, this letter suggested that the first packet might have been lost in the mail, and reiterated that the confidential nature of the responses would be respected. This covering letter is included in Appendix A.

³⁰Kimball, Andrew E., "Increasing the Rate of Return in Mail Surveys," Journal of Marketing, 25 (October, 1961), pp. 63, 64.

On January 22, 1970, Robert G. Welch, President of the Steel Service Center Institute, wrote to members of the sample who had not responded, urging their cooperation, and reassuring them of the confidential nature of any information they supplied.

This letter aided considerably in increasing the average number of questionnaires per firm returned, and the customer list response rate. Mr. Welch's letter is reproduced in Appendix A.

Meanwhile, steel service centers were returning their yellow lists of ten representative customers. As each arrived, the customer questionnaire and covering letter were mailed. In this case, there were two types of covering letter. The first stated that the customer's name had been provided by such and such a steel service center as one of the firm's valued customers. Where the steel service center did not wish to be identified, the second type of customer letter with no indication of referral was used. In both cases, the letters were personally addressed to an individual

in the customer firm, were signed by hand in ink, and both the packet and return envelope were stamped rather than metered. Three to four weeks after an initial customer contact was made, a second identical packet was mailed to non-responding customers in the sample. Covering letters appear in Appendix A.

The first set of customer packets was mailed on November 19, 1969 and customer mailings were continuous throughout a five-and-one-half month period, with the last follow-up being mailed on April 28th, 1970.

At all three levels, a grand total of 4,953 questionnaires and 598 yellow customer lists were mailed to contact 21 mills, 391 steel service centers, and 731 customers. Nine out of ten mills, six out of ten steel service centers, and five and a half out of ten customers responded. For those mills which responded, an average of 4.8 questionnaires per mill was returned. For the responding steel service centers, an average of 1.9 questionnaires was returned. Approximately one in every three

responding steel service centers also returned a complete list of representative customers. Table 1 provides details of the response patterns.

It is interesting to note the effect of referral on customer response rates. On the form supplied to the steel service centers for listing ten representative customers, the final question was: "May we use your name to introduce ourselves to these people?"

. . . . Yes
 No
 Have no preference."

When steel service centers checked "Yes" or "Have no preference," the covering letter to the customer stated: "Your name was suggested to us by Mr. John Doe, XYZ Steel Service Center, as one of the firm's valued customers." Where the steel service center checked "No" or left all alternatives blank, there was no referral paragraph.

A total of 47 steel service centers checked "Yes" or "Have no preference," and supplied a total of 458 customer names. The remaining 28 firms did not wish to be identified as providing their customer

TABLE 1

RESPONSES TO QUESTIONNAIRE SURVEY

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	First Wave		Second Wave		Total	
	Number	%	Number	%	Maximum	%
<u>MILLS</u>						
Firms Contacted	21		5		21	
Firms Responding	16	76.2	3	60.0	19	90.5
Questionnaires Mailed	126		30		126	
Questionnaires Received	76	60.3	15	50.0	91	72.2
<u>STEEL SERVICE CENTERS</u>						
Firms Contacted	391		207		391	
Firms Responding	184	47.1	60	29.0	244	62.4
Questionnaires Mailed	2,346		1,242		2,346	
Questionnaires Received	249	10.6	210	16.9	459	19.6
Customer Lists Mailed	391		207		391	
Customer Lists Received	39	10.0	36	17.4	75	19.2
<u>CUSTOMERS</u>						
Questionnaires Mailed	731		479		731	
Questionnaires Received	252	34.5	150	31.3	402	55.0

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names, and supplied 273 customer names. The number of customers responding to the first mailing containing a covering letter naming their supplier was 183, while those responding to the first mailing with no reference to their supplier numbered 69. Proportionately, questionnaires with an identified referral in the covering letter drew a response rate of 40.0 per cent, while those with no referral drew a response rate of only 25.3 per cent.

It may be concluded that a request for cooperation in completing a mail questionnaire is vastly enhanced if it is accompanied by an introduction or referral from an individual or firm with whom the respondent is doing business, rather than being identified solely with an educational research project or impersonal research organization.

DATA PREPARATION

Prior to analysis, the returned questionnaires were carefully edited and coded. A total of 64 questionnaires had to be discarded on the grounds that the respondents did not understand the task or

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were not attending to it. Rejection criteria were three-fold: a) respondents who did not answer all scales or who omitted classification data; b) respondents whose answers followed systematic patterns, such as all checkmarks in one column, checkmarks in only two or three columns with a consistent design, checkmarks identical over all scales on Parts one and two, or checkmarks identical between two or more respondents from the same firm; and c) respondents who gave inconsistent responses, such as several scales containing more than one checkmark. Table 2 reflects the results of editing the questionnaires.

After editing and coding, all questionnaire response data were punched on standard IBM data cards. Data analyses were performed with a CDC 6400 computer operated by the McMaster University Computing Center, using modifications of programs developed by the Health Sciences Computing Facilities of the University of California at Los Angeles, plus some specially prepared programs developed by McMaster University programmers under the direction of the author.

TABLE 2
QUESTIONNAIRE EDITING RESULTS

	Question- naires Received	Usable Question- naires	Rejected Question- naires	Per Cent Rejected
MILL	91	89	2	.022
STEEL SERVICE CENTER	459	436	23	.050
CUSTOMER	401	362	39	.097
TOTAL	951	887	64	.067

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TECHNIQUE OF ANALYSIS

The semantic differential is an ordinal or ranking scale of measurement, having the formal properties of being irreflexive, asymmetrical, and transitive. The ordinal scale is unique up to a monotonic transformation. Thus, arithmetic operations on the data, such as calculation of means and use of parametric statistics, are in error to the extent that the successive intervals on the scale are not equal, and that the structure of the method of collecting the data is not isomorphic to arithmetic.³¹ However, since research shows that assumptions stronger than those about an ordinal scale are not unrealistic when applied to the semantic differential,³² and since the common practice in the world of business is to apply parametric analyses to semantic differential data, this study

³¹Siegel, Sidney, Nonparametric Statistics for the Behavioral Sciences, New York: McGraw-Hill Book Company, 1956, pp. 22-30.

³²Messick, loc. cit.

will report mean values, and apply certain arithmetic manipulations to the data. It is nevertheless recognized that such operations may be in error, and consequently the results may not be viewed as exact, but rather as approximations.

One technique which has found widespread application in analysis of semantic differential data, and particularly in image measurement studies, is factor analysis. "The dimensions derived from factor analysis appear to be meaningful perceptual units for the study of a corporate image."³³ Another researcher suggests: "The most systematic method for cleaning up the difficulties in corporate-image research would be a thorough-going factor analysis of data from a reasonably large, national sample of respondents who have rated fifteen or

³³Spector, Aaron J., "Basic Dimensions of the Corporate Image," Journal of Marketing, 25 (October, 1961), p. 51

twenty diverse corporations on fifty or sixty apparently distinct traits."³⁴

In factor analysis, correlations are run between each pair of semantic differential scales. The factor analysis program then identifies clusters of scales which intercorrelate highly with each other, but relatively poorly with the scales of other clusters or factors. For every cluster of scales, a vector is established and each scale is then correlated with the reference vector of every factor. A scale's correlation with a reference vector is called its loading on that factor. A scale is assigned to a particular factor when its loading on that factor is relatively high and its loading on the other factors is relatively low. Scales whose factor loadings are too low or whose loadings are fairly equivalent on all factors are considered ambiguous and are discarded. Scales

³⁴Tucker, W.T., "How Much of the Corporate Image is Stereotype?" Journal of Marketing, 25 (January, 1961), p. 65.



retained have a relatively high and pure loading on a particular factor. This factor loading is generally accepted as a measure of the strength of association between the scale and the factor.

The number of factors extracted depends to a large extent on the nature of the data. Usually, only those factors which reduce residual correlations substantially are retained. The result of this type of analysis is a set of several factors, each of which is measured by a number of scales. The factors are considered to represent dimensions of meaning in a semantic space.

LIMITATIONS OF THE STUDY

Although the use of a mail questionnaire eliminates the problem of interviewer bias, the instrument nevertheless can be criticized as limiting the range of response open to the respondent, and as introducing semantic difficulties. The respondent also is free to go back over scales and change responses. Furthermore, it is difficult to determine the nature of non-respondents. Some of

the first limitation was reduced by asking respondents to comment on the last page of the questionnaire, and many did. Secondly, respondents were asked to work rapidly and not go back. Thirdly, the follow-up mailing, and high rates of response, suggest that the non-respondent problem was small.

The ordinal nature of the semantic differential instrument, as previously mentioned, limits the range and type of mathematical and statistical operations which may be applied to the data. There is evidence that this may not be a serious limitation. However, it would be foolhardy to infer that the conclusions of this study are more precise than broad generalizations and approximations.

The interpretation of factor analysis has been and will continue to be the object of much debate. It is possible to interpret factors in more than one way. Unlike research in the physical sciences, measurements of individual perceptions rarely can be made with a high level of accuracy under precisely controlled conditions. Nevertheless, useful information can be obtained, particularly when the interpreter is aware of the

potential hazards, and is conversant with underlying operational relationships that have provided data for factor analysis.

Keeping these limitations in mind, the following chapters will provide some insights into the motivations and expectations which exist in the distribution channel relationships of steel service centers.

CHAPTER TWO

IMAGE THEORY AND APPLICATION

To describe images in the channel of distribution for steel implies the choice of what elements of channel relationships have been observed, and what measurements or classifications have been used in the observations. These decisions are based, either implicitly or explicitly, on a theory or set of theories that explain what it is important to observe and describe about marketing image phenomena.¹

In this chapter, three major theories which are most relevant to images projected by business firms are outlined. These theoretical constructs provide an intellectual and philosophical basis for understanding the relationship between image and the human organism, the development of images, and the mechanism of image formation. The practical

¹See Halbert, Michael, The Meaning and Sources of Marketing Theory, New York: McGraw-Hill Book Company, 1965, p. 4.

application of image concepts to the world of business is then presented in a distillation of the material appearing in professional and business trade journals. These ideas are then incorporated into an operational definition of image, and its implications for businessmen are developed.

The theories and concepts included in this chapter have been selected from an abundance of literature on imagery. The central criterion employed in the selection process was their relevance to the business enterprise. Thus, a great deal of valuable theoretical work on imagery was excluded. Among the excluded materials are works dealing wholly or principally with auditory and tactual perception, dream theory and imagination, motor or physiological theory, neural or psychophysiological theory, and linguistic imagery. A secondary selection criterion applied to the remaining materials was their pertinence to the specific research questions examined in this dissertation. The theories, concepts and materials retained after this selection process form the remainder of this chapter.

IMAGE THEORY

JEAN PIAGET

Important to image theory is Jean Piaget's biological-development theory of intelligence. In this theory, mental activity develops, from perception to symbolic behavior, as a function of the assimilation--accommodation equilibrium called intellectual adaptation. Adaptation is the result of environment-organism interaction. It is composed of: 1) assimilation, where external objects are incorporated into the organism's organized patterns of behavior, and 2) accommodation, where the organism adjusts its organized frame of reference and actions to surrounding pressures or stimuli.

In purchasing behavior, a buyer, through assimilation, may deal with an outlet which meets his expectations. However, through accommodation, certain aspects of the outlet's operations, such as delivery speed, may require him to alter his purchasing behavior, say from ordering once a week to placing biweekly orders. Thus through assimilation and accommodation an equilibrium or adaptation is

effected and his perceptions and image of the outlet are developed.

A cognitive structure, an organized disposition, strategy or action sequence which has become a recurring part of the organism's intellectual and behavioral repertoire, Piaget calls a "schema." The individual mentally organizes the world about him, through schemata.

Both adaptation and schemata are stage-dependent aspects of Piaget's cognitive theory. The stages of individual development are:

- 1) Sensory-Motor Intelligence (0-2 years).
The child equilibrates external, sensory and motor actions. Perception develops in sensory-motor actions. Perceptual constancy is a major achievement.
- 2) Concrete Operations (2-11 years). The child equilibrates first-degree internal, symbolic-representational operations. Reality is classified, and ordered.
- 3) Formal Operations (11-15 years). The youth equilibrates second-degree internal symbolic-representational operations. He

operates on first-degree operations rather than realities. Representational thought is hypothetical and deductive, conditionally based on the classifications and groupings of the second stage.

In stage three, absolute knowledge based on deduction is attained. Perception, however, is always probabilistic and approximate; never achieves permanent, stable equilibrium. In early development, "primary perception" is strong and distortion occurs frequently. As perceptual development proceeds, "perceptual activity" becomes stronger, stimuli are compared, explored and interpreted, while primary distorting field effects are reduced. Perception derives meaning in mediation of the schemata associated with the development of intelligence. An image is not a primary fact. It is an active copy of perceived reality. "It is thus internal imitation and is an extension of the accommodatory function of the schemata characteristic of perceptual activity

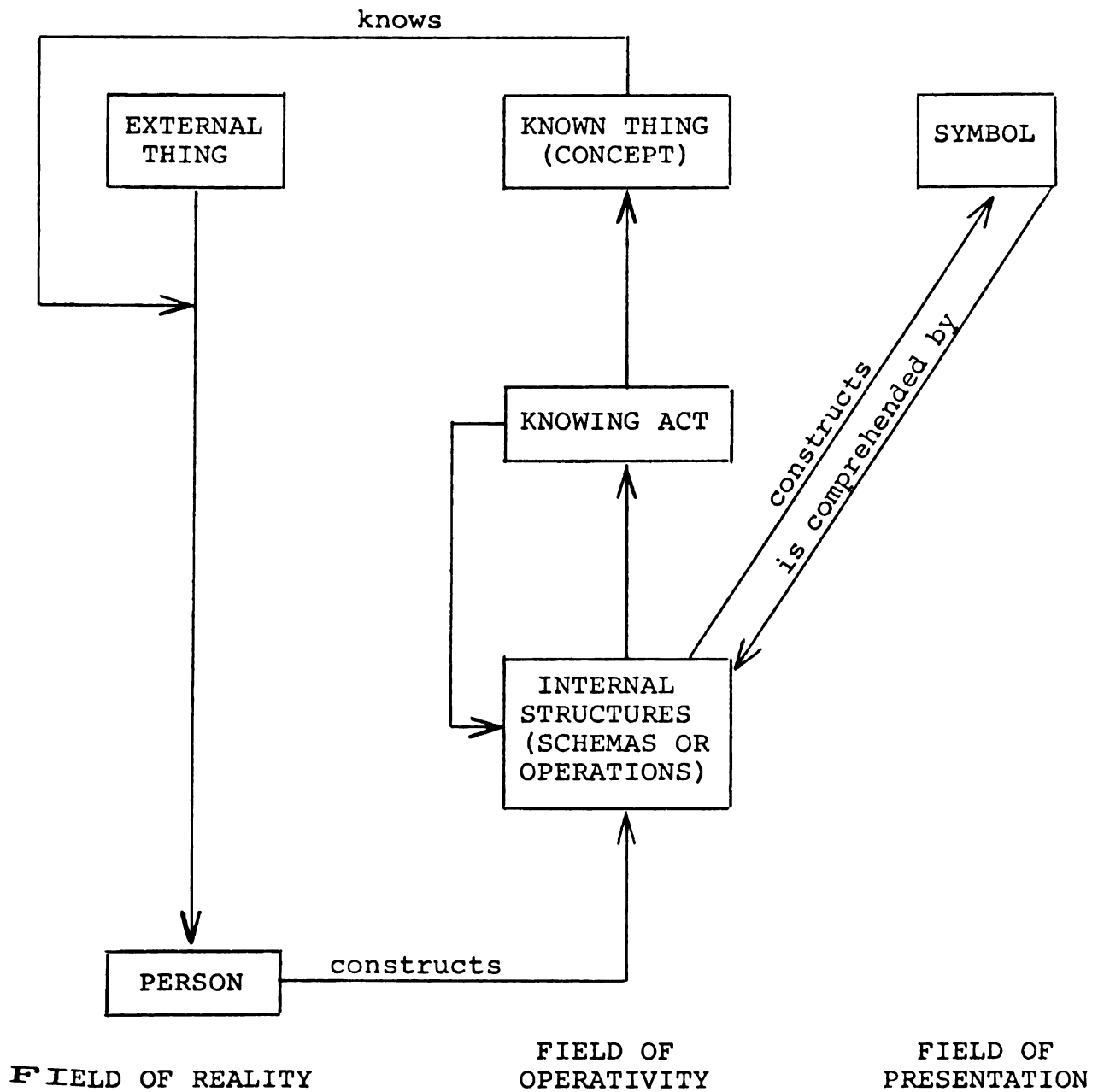
(as opposed to perception itself), . . ."²

Piaget terms the ability to know things, the "symbolic" or "semiotic" function. Any behavioral thing or event that provides knowledge about another thing or event, he labels a "signifier" (sign). The event about which the sign provides information, he calls the "signified" (significate). The sign signifies the significate.

There are two types of signs: A signal acts as a substitute for an external stimulus event, and elicits similar behavior (e.g. Pavlov's bell). A symbol is reproduced by the organism as a representation of direct knowledge of the event, and is thus indirect and mediated by the schema of knowing, or the intelligent appraisal of the perceived situation. The relationship of the symbol to operative knowing is illustrated in Figure 1.

Piaget sees three basic forms of symbolic behavior: Language, Play and Image. Images are the most important form because without them normal

²Piaget, Jean, The Psychology of Intelligence, London: Routledge & Kegan Paul Ltd., 1950, p. 126.



Source: Furth, Hans G.,
Piaget and
Knowledge,
 p. 94

Figure 1.--Three fields in Piaget's
 operative theory of knowledge.

intelligence could not develop. "In the narrow sense, representation can be limited to the mental image or to the memory-image, that is to the symbolic evocation of absent realities the image (is) a concrete symbol; even though one no longer reduces thought to a system of images, it is conceivable that all thought is accompanied by images."³

Using Piaget's construct, image would be defined as deferred imitation that is internalized and reduced in its overt activity. Of the role played by mental image, Piaget states: "If the image is not an element of thought, it nevertheless serves on a par with language as a symbolic instrument to signify the content of the cognitive significations; for spatial concepts the effectiveness of the image is particularly evident."⁴

³Piaget, Jean, "La formation du symbole chez l'enfant," Neuchâtel: Delachaux et Niestlé, 1946 (Play, Dreams and Imitation in Childhood, New York: Norton, 1961), p. 68.

⁴Piaget, J., and Inhelder, B., "L'image mentale chez l'enfant: Étude sur le développement des représentations imagées," Paris: Presses Universitaires de France, 1966, p. 446.

GEORGE MEAD

Another major contributor to image theory is George H. Mead. His theory may be described as an interactionist perspective. Meaning is a function of the interaction of the individual with his environment. The content of the mind develops from and is a product of social interaction. The individual internalizes the social processes of experience and behavior.

Mead distinguishes between physical sensations and self-consciousness. Only through empathy with the attitudes of other individuals, social groups, and the community as a whole can the individual experience self-consciousness. This is accomplished through the "conversation of significant gestures." A gesture may be verbal or symbolic: a word, a glance of the eye, a motion of the head, or a pointed finger. It becomes significant when communication exists, when the response that such a gesture arouses in another individual is closely similar to that in the individual who made the gesture. Otherwise the gesture is merely a physical

sensation. Through the significant gesture the individual communicates meaning, both to himself and to others.

Human behavior results from impulses. Mead defines an impulse as " . . . a congenital tendency to react in a specific manner to a certain sort of stimulus under certain organic conditions. Hunger and anger are illustrations of such impulses."⁵ Both the biological and psychological state of the individual govern impulse intensity, and as a result, which stimuli the individual will react to. Image plays an important role in determining the selection of appropriate stimuli to satisfy the impulse. Thus impulse intensity and image type govern the selective perception of stimuli.

Imagery originates in past experiences, but its primary reference is to the future. An image will develop covering a wide range of past experiences, then will be generalized on a wider scale,

⁵Mead, George H., Mind, Self and Society, Chicago: University of Chicago Press, 1934, p. 337.

and act as a reference point for future actions. Once established, an image maintains continuity as time passes. Even though the objects to which it refers are absent, the image is not lessened. Thus images are a function of the environment. They are symbols obtained from past experience, attitudes and environmental conditions, are socially derived, and act as benchmarks for future action.

CHARLES OSGOOD

A third major theory of image is derived from the work of Charles Osgood. Extending the ideas of C.K. Ogden and I.A. Richards,⁶ and Charles Morris,⁷ Osgood, Suci and Tannenbaum⁸ build their

⁶Ogden, C.K., and Richards, I.A., The Meaning of Meaning, New York: Harcourt, Brace, 1923.

⁷Morris, C.W., Signs, Language and Behavior, New York: Prentice-Hall, 1946.

⁸Osgood, Charles E., Suci, George J. and Tannenbaum, Percy H., The Measurement of Meaning, Urbana: University of Illinois Press, 1957.

theory of image on the basis of symbolic mediation. Meaning is viewed as a mediation process.

A significate (\hat{s}) is defined as any object or stimulus which, in a given situation, regularly and reliably produces a predictable pattern of behavior (R_T). If the situation is hunger, the object food is a significate triggering the pattern of behavior known as eating which includes salivation, swallowing, etc.

If some stimulus other than the significate is near the significate, it will acquire some association with part of the behavior the significate elicits. For example, a sign [s] is any stimulus which has come to represent the significate, e.g., the printed or verbal word "food," a picture of food, etc. The meaning of the sign depends on the nature of behavior occurring while the sign is being established. Many signs have constant meaning to a large number of people, e.g., food objects. However, individual experiences may create vastly differing connotations for the signs, e.g., the meaning of the sign "father" to the son of an authoritarian parent versus an indulgent parent.

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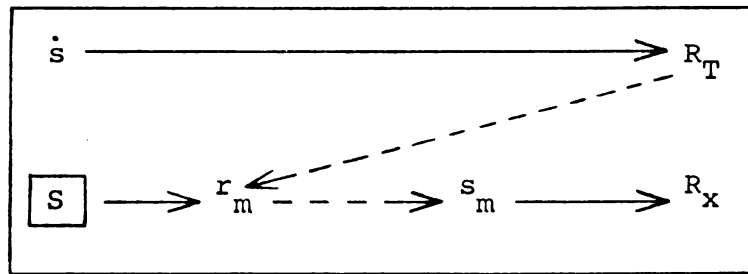
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Most signs are really assigns /S/ because their meaning is "assigned" to them through association with other signs rather than via association directly with the significate itself. The word zebra, for example, is an assign because the meaning of the word is learned through pictures and descriptions of "horses with stripes," rather than direct contact with the object.

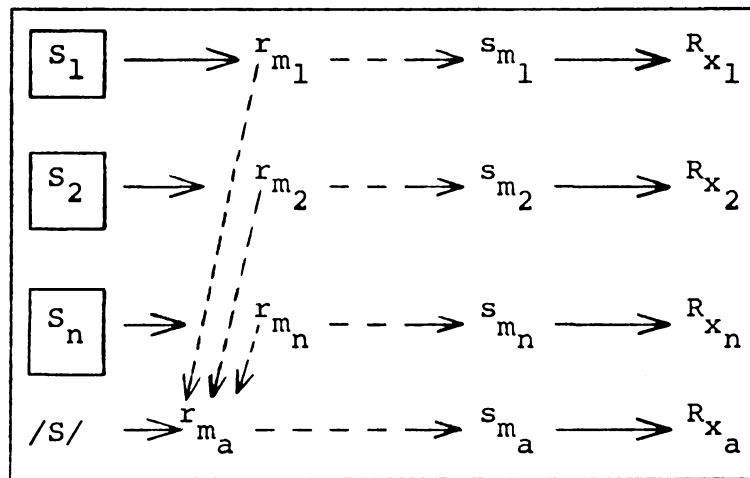
The process through which a sign elicits similar behavior (R_x) to that stimulated by the significate contains two elements. The disposition to respond in a similar way to R_T is represented by r_m . The self-stimulation to react with instrumental acts (R_x) is designated s_m --the mediational part of the process.

Osgood et al. represent the total process of developing signs as shown in Figure 2.

Thus the Pavlovian Stimulus-Response model is developed into a two stage paradigm. The first stage, called decoding, is the association of signs with representational mediators, or put another way, the interpretation of an idea. The second stage,



Development of a Sign



Development of an Assign

\dot{S}
 R_T
 S
 r_m
 s_m
 R_x
 $/S/$

- = a significate
- = a behavior pattern produced by the significate
- = the sign
- = the response disposition
- = the self-stimulation
- = the instrumental acts similar to R_T
- = an assign

Source: Osgood, Suci and Tannenbaum, The Measurement of Meaning, p. 7.

Figure 2--The development of a sign and an assign

labelled encoding, is "the association of mediated self-stimulation with overt instrumental sequences," or, more simply, the expression of ideas. The first stage may be called semantic meaning, and the second, pragmatic meaning.

Thereby, Osgood et al. define the meaning of "meaning" in the psychological sense as "that process or state in the behavior of a sign-using organism ($r_m \longrightarrow s_m$) which is assumed to be a necessary consequence of the reception of sign-responses."⁹

To get at the meaning of the stimulus sign, Osgood developed a test for the selection of successive alternative descriptions which gradually eliminates the uncertainty about the object being thought of. The concept is differentiated through evaluation on a set of bipolar descriptive seven-step scales which indicate both the direction and intensity of controlled association with the concept. Thereby the symbolic processes which mediate behavior

⁹Ibid., p. 9, author's insert in brackets.

responses to the sign are exposed. The symbolic image is defined by the location of a concept in a semantic space. This research study will use Osgood's semantic differential to study the image of steel service centers in the United States.

SUMMARY

These three major theories of image provide a basis upon which the researcher may build. Piaget suggests that all thought is accompanied by images, that the level of image abstraction is stage-dependent, and is associated with intellectual adaptation. Mead extends our understanding of imagery beyond its meaning in the individual as a developing organism to its significance within the social setting. Furthermore, he suggests that images are not simply copies of reality. They play an important role in selective discrimination of reality, and in governing the individual's future behavior. Osgood extends this view by showing how, through association, the mediation mechanism which both interprets image and elicits behavior can be measured and located in semantic space.

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IMAGE APPLICATION

"If you ask any businessman what he means by image, you will get as many answers as businessmen questioned."¹⁰

This poses a problem in surveying image literature in business and professional journals. Most authors view the concept of image from a slightly variant perspective. At first this may appear to be an insurmountable problem. Nevertheless, there is good reason for so many differing points of view. The fact is, "All objects we use take on meanings which are not inherent in the object itself and can only be discovered by exploring people's minds."¹¹

There is general agreement that all businesses, no matter what their size, project a unique

¹⁰Heidingsfield, M.S., "Building the Image--An Essential Marketing Stratagem," New Directions in Marketing, ed. F.S. Webster, Chicago: American Marketing Association, 1965, p. 133.

¹¹Gardner, Burleigh B., "Behavioral Sciences as Related to Image-Building," New Directions in Marketing, ed. F.S. Webster, Chicago: American Marketing Association, 1965, p. 146.

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and distinctive image of themselves.¹² There is also unanimity on the variegated composition of image. The number of elements grouped to construct an image are variously described as a composite,¹³

¹²Baker, Stephen, "The Art of Building a Corporate Identity," Public Relations Journal, 18 (January, 1962), p. 16.

Christian, Richard C., "How Important is the Corporate Image," Journal of Marketing, 24 (October, 1959), p. 80.

Martineau, Pierre, "Sharper Focus for the Corporate Image," Harvard Business Review, 36 (November-December, 1958), p. 51.

¹³Baker, loc. cit.,

Crissy, W.J.E., and Kaplan, Robert M., Salesmanship--The Personal Force in Marketing, New York: John Wiley & Sons, Inc., 1969, p. 354.

Nelson, Bardin H., "Seven Principles in Image Formation," Journal of Marketing, 26 (January, 1962), p. 68.

Wiebe, Gerhart D., "The Social Dynamics of Corporation-Public Relationships: A Model and Parable," The Corporation and Its Publics, ed. W. Riley, Jr., New York: John Wiley & Sons, Inc., 1963, p. 13.

a kaleidoscope,¹⁴ a mosaic,¹⁵ a complex,¹⁶ a collection,¹⁷ a set, cluster or infinite number,¹⁸

¹⁴Berkwitt, George, "Does the Corporate Image Really Change?," Dun's Review, 95 (January, 1970), p. 20.

¹⁵Carlson, Robert O., "The Nature of Corporate Images," The Corporation and Its Publics, ed. J.W. Riley, Jr., New York: John Wiley & Sons, Inc., 1963, p. 38.

¹⁶Crespi, Leo P., "Some Observations on the Concept of Image," Public Opinion Quarterly, 25 (April, 1961), p. 119.

Harris, Remus A., "How Creativity in Marketing Can Develop the Image That Counts: The Consumer Demand Image," Advertising Age, 29 (July 21, 1958), p. 61.

Martineau, op. cit., p. 52.

¹⁷Easton, Allan, "Corporate Style versus Corporate Image," Journal of Marketing Research, 3 (May, 1966), p. 168.

¹⁸Ferber, Robert, Blankertz, Donald F., and Hollander, Sidney, Jr., Marketing Research, New York: The Ronald Press Company, 1964, p. 507.

Gardner, op. cit., p. 145.

Heidingsfield, op. cit., p. 134.

Robinson, Claude, and Barlow, Walter, "Corporate Image--Fad, or the Real McCoy?," Public Relations Journal, 15 (September, 1959), p. 10.

Martineau, op. cit., p. 51.

Osgood, Charles E., and Tannenbaum, Percy C., "The Principle of Congruity in the Prediction of Attitude Change," Psychological Review, 62 (January, 1955), p. 42.

a summation,¹⁹ and a classification.²⁰ But what are these ingredients?

They are "all the things associated with the organization and its products."²¹ They are "private impressions."²² They are "concepts, judgments, preferences, and attitudes."²³ They are "ideas or feelings."²⁴ They are "associations and

¹⁹Spector, Aaron J., "Basic Dimensions of the Corporate Image," Journal of Marketing, 25 (October, 1961), p. 47.

²⁰Berry, Leonard L., "The Components of Department Store Image: A Theoretical and Empirical Analysis," Journal of Retailing, 45 (Spring, 1969), p. 4.

²¹Hill, Edward W., "Corporate Images are Not Stereotypes," Journal of Marketing, 26 (January, 1962), p. 73.

²²Baker, loc. cit.

²³Berkwitt, loc. cit.
Easton, loc. cit.
Hill, loc. cit.

²⁴Crissy and Kaplan, loc. cit.
Ferber, Blankertz and Hollander, op. cit. p. 656.
Nelson, loc. cit.
Wiebe, loc. cit.

²⁵Gardner, op. cit., p. 145.

meanings."²⁵ They are "mental pictures."²⁶ They are "factors or dimensions."²⁷ They are perceptions.²⁸

They are generated by the organization, its products and, indeed, the entire marketing mix,²⁹ through direct personal experience, exposure to the media, indirect contact, and hearsay.³⁰ They are also derived partly from the psychological predispositions of the individual.³¹

²⁵Martineau, loc. cit.

²⁶Robinson and Barlow, loc. cit.

²⁷Osgood and Tannenbaum, loc. cit.

²⁸Spector, loc. cit.

²⁹Baker, loc. cit.
Ferber, Blankertz, and Hollander, loc. cit.
Harris, loc. cit.
Spector, loc. cit.

³⁰Easton, loc. cit.

³¹Crespi, loc. cit.
Easton, loc. cit.

Heidingsfield, op. cit., p. 133.

Martineau, Pierre, "The Personality of the Retail Store," Harvard Business Review, 36 (January-February, 1958), p. 47.

Robinson and Barlow, loc. cit.

Rosenow, Curt, "The Genesis of the Image," Psychological Review, 25 (1918), p. 299.

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Despite the fact that many elements comprise image, the result is an abstraction³² or generalization³³ which gives the total or final³⁴ impression of the firm. This impression of the firm exhibits "freedom of image": " . . . the presence in consciousness of sensory material which does not blend into the perceptual situation, but maintains, so to speak, a semi-independent existence of its own. . . ."³⁵ The meaning of such an image is ". . . more complete and satisfactory than the meaning possessed by the percept,"³⁶ and is deceptive.³⁷ This freedom of

³²Hill, loc. cit.
Martineau, "Sharper Focus for the Corporate Image," p. 51

³³Ferber, Blankertz and Hollander, loc. cit.
Martineau, "Sharper Focus for the Corporate Image," p. 51.

³⁴Berry, loc. cit.
Heidingsfield, loc. cit.

³⁵Rosenow, op. cit., p. 299.

³⁶Colvin, op. cit., p. 167.

³⁷Ibid., p. 159.

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image leaves a final impression that may not be factual.³⁸ It may be irrational,³⁹ self-contradictory,⁴⁰ false,⁴¹ erroneous,⁴² and grossly inaccurate.⁴³

An image may be contrary to fact. The reason is partially due to the "tricks" of perception. No two people can give an exact and identical description of the facts of an automobile accident. Furthermore, selective perception by an individual tends to

³⁸Ferber, Blankertz and Hollander, op. cit.
p. 508.

³⁹Nelson, op. cit., pp. 68, 69.

⁴⁰Stephenson, William, "Public Images of Public Utilities," Journal of Advertising Research, (December, 1963), p. 35.

⁴¹Drummond, Margaret, "The Nature of Images," British Journal of Psychology, 17 (July, 1926), p. 19.
Boulding, K.E., The Image, Ann Arbor: University of Michigan Press, 1963, pp. 164-175.
Martineau, "Sharper Focus for the Corporate Image," p. 53.

⁴²Crespi, op. cit. p. 119.

⁴³Gardner, op. cit. p. 145.

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isolate and emphasize certain features which another person may de-emphasize. What a person looks for, his psychological set, depends on his motivations and values. "Imagery is what one feels about a person, idea, product, or institution in relation to one's own ego or self-involving motives."⁴⁴

" . . . erroneous images can be tenaciously held even in the face of correct information, because of the infusion in images of one's values and purposes."⁴⁵

Once a corporate image has been established in the mind of a supplier or customer, whether it is an accurate representation of the firm or not, further impressions of or contacts with that firm tend to be colored by the established image. It thus becomes difficult to change the image. "Image is inferred from people's impressions of the firm, regardless of the firm's actual behavior."⁴⁶

⁴⁴Stephenson, William, op. cit. p. 35.

⁴⁵Crespi, loc. cit.

⁴⁶Easton, op. cit., p. 168.

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"Facts or no facts, these images cause us to reject what we do not agree with. On the other hand, we allow agreeable material to pour in unchanged. The good image has a halo effect, so that it gets credit for all sorts of good things which might be quite contrary to truth."⁴⁷ Having formed an image of the firm, " . . . we then tend to sort and classify any additional impressions as they relate to this abstraction: favorable messages we accept as being correct; unfavorable messages we reject as being incorrect."⁴⁸

A related phenomenon has been called the "source" effect: " . . . the audience's feelings about the credibility of the message source help determine the persuasive effectiveness of the message itself. The greater the prestige or the more believable the message source, the more likely that it will influence the audience in the direction advocated by

⁴⁷Martineau, "Sharper Focus for the Corporate Image," p. 53.

⁴⁸Hill, op. cit., p. 73.

the message. The less prestigious or believable the source, the less likely that it will influence the audience in the direction advocated by the message."⁴⁹ Additional evidence indicates that messages are interpreted by the individual, and always move toward congruence with his own taste.⁵⁰

A DEFINITION OF IMAGE

In summary, every organization has a unique corporate image. Image may be defined as being composed of many evaluative elements, generated by all associations with the firm and abstracted into an independent final stable impression, whose meaning has been mediated by the individual's values and biases.

⁴⁹Levitt, Theodore, "Communications and Industrial Selling," Journal of Marketing, 31 (April, 1967), p. 16.

⁵⁰Osgood and Tannenbaum, op. cit., p. 42-55.

IMPLICATIONS

In 1958, it was estimated that United States business firms spent a total of one billion dollars per year to improve their image.⁵¹ The reason for such expenditures is that "The image plays an increasingly vital part in the fortunes of business."⁵² Imagery is important to the business executive because it may:

- predispose potential customers to buy
- elicit testimonial recommendations to potential customers
- influence initial purchasing behavior
- increase sales to current customers
- improve profits
- differentiate the firm from competitors
- assist management in developing objectives, strategies, and policies.

The image performs a "gate keeper" function-- increasing the proportion of potential customers in a

⁵¹Martineau, "Sharper Focus for the Corporate Image," p. 49.

⁵²Martineau, "The Personality of the Retail Store," p. 53.

See also Harris, op. cit., p. 62.

state of being ready, willing, and able to buy.⁵³ It serves as a latent guiding force, but needs a precipitating circumstance to trigger action. The image is seen as a key opening doors separating customers' minds from buying action.⁵⁴ One author speaks of capturing a "Share of Mind" as well as a market share.⁵⁵

To a large extent, image governs customers' buying behavior.⁵⁶ A favorable image also may increase the likelihood that customers will recommend the firm's products to others.⁵⁷ (See Figure 3).

⁵³Fisk, George, "A Conceptual Model for Studying Customer Image," Journal of Retailing, 37 (Winter, 1961-1962), pp. 1, 3.

⁵⁴Harris, op. cit., p. 61

⁵⁵Christian, op. cit., p. 80.

⁵⁶Stephenson, T.E., "The Prismatic Image of the Organization," California Management Review, 5 (Spring, 1963), p. 68.

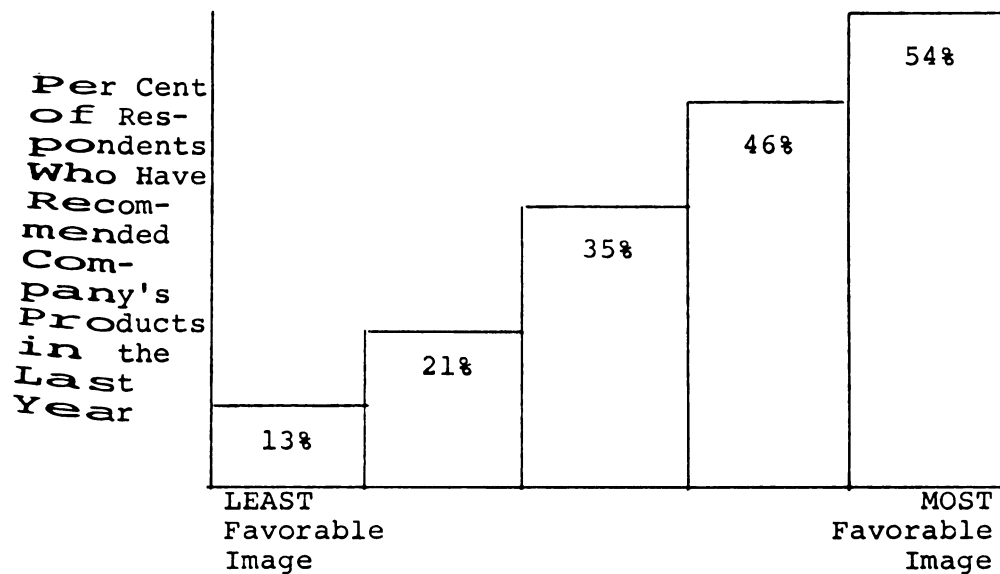
Martineau, "Sharper Focus for the Corporate Image," p. 53.

Gardner, op. cit., p. 145.

⁵⁷Goeke, Joseph R., and Skibbins, Gerald J., "Measuring Corporate Images," Art Direction, 10 (January, 1959), p. 73.

Robinson and Barlow, op. cit., p. 12.

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Source: Robinson, Claude, and Barlow, Walter, "Corporate Image - Fad, Or the Real McCoy?" Public Relations Journal, 15 (September, 1959), p. 12.

Figure 3--The Relationship Between Image and Referral - in 20 large companies.

Whether a favorable image is worth working toward depends upon whether efforts to attain a favorable image will improve profits. It is asserted that a favorable image is an all pervading factor which will directly affect financial success.⁵⁸ Yet, there is a "lacuna in research data testing this crucial proposition."⁵⁹ It is true that friendly feelings toward a corporation are not enough. Fortunately, some studies have been done. In one study, it was found that a favorable corporate image may influence people to buy a particular product even though they admit that it lacks qualities they usually look for in the product.⁶⁰ Also, " . . . there are survey-research data which indicate that favorable corporate attitudes are found with highest frequency among regular users of a firm's products."⁶¹

⁵⁸Christian, loc. cit.
Heidingsfield, op. cit., p. 134.

⁵⁹Carlson, op. cit., p. 42.

⁶⁰Carlson, Ibid., p. 43.

⁶¹Carlson, Ibid.

In a more recent research study, a positive correlation was found between a good image and purchases of a company's products.⁶² Further, over an interval of two years, it was discovered that when image improved, more products were bought, and vice versa; and that change in purchasing behavior was preceded (and probably caused) by the change in image. As well as incurring more favorable attitudes toward a firm, increasing sales, and improving profits, corporate imagery serves several other functions.

One of the accepted marketing strategies for improving a firm's competitive position in the marketplace is differentiation.⁶³ " . . . nearly all the products and services in industry and trade involve some differentiation between competing sellers, in

⁶²Neadle, Dexter, "The Relationship of Corporate Image to Product Behavior," Public Opinion Quarterly, 28 (Summer, 1964), pp. 293-302.

⁶³Smith, Wendell R., "Product Differentiation and Market Segmentation as Alternative Marketing Strategies," Journal of Marketing, (July, 1956), pp. 3-8.

the product itself, in services connected with it, including transport, or in the image it presents to the mind of the buyer."⁶⁴ Product differentiation becomes especially difficult in the industrial market which is usually characterized as having a homogeneous product-service mix.⁶⁵ Thus the weight of a differentiating strategy must be borne by the corporate image.

"It is this concept of image which clarifies the otherwise inexplicable situation of distinct preferences among products which are objectively identical or imperceptible in their differences, which clarifies the even more disconcerting situation in which the objectively worse is preferred to the better."⁶⁶

⁶⁴Clark, John M., Competition as a Dynamic Process, Washington: The Brookings Institution, 1961, p. 212.

⁶⁵Christian, loc. cit.

⁶⁶Crespi, op. cit., p. 115.

It can be seen that image may be used as a differentiating feature by the firm. But what if a firm does not consciously include image in its strategy? "Even if there is little attempt on the part of the firm to project an image of itself or its products, images will still be developed by the publics who know of and are in contact with it."⁶⁷ The importance of this fact is that the spontaneously generated image may do the organization a great deal of harm. Consequently, it is imperative that the image be fashioned to insure that its effects are beneficial to the firm. A good image does not occur by accident. It is the result of "planned and sustained efforts."⁶⁸ Indeed, one author propounds that a "key purpose" of the organization should be to successfully project the desired corporate image.⁶⁹

⁶⁷Stephenson, T.E., op. cit., p. 67.

⁶⁸Berkwitt, op. cit., p. 21.

⁶⁹Eells, Richard, "The Corporate Image in Public Relations," California Management Review, 1 (Summer, 1958), p. 17.

Another reason for concern over image is the phenomenon that many executives are not familiar with their customer mix⁷⁰--an unpardonable sin in the eyes of the marketer. If one is not truly conversant with his customers, there is no way he can know what his firm's image is. It is "important to know the image of an establishment in order to aid in developing appropriate goals, objectives, strategies, and policies for the firm."⁷¹

IMAGE FORMATION

In developing an appropriate corporate image, certain problems may occur. One of the more serious is the "blurred image."⁷² No firm should attempt to

⁷⁰Martineau, "The Personality of the Retail Store," p. 49.

⁷¹Mason, Joseph Barry, and Mayer, Morris L., "The Problem of the Self-concept in Store Image Studies," Journal of Marketing, 34 (April, 1970), p. 68.

⁷²Carlson, op. cit., p. 38.
Heidingsfield, op. cit., p. 135.
Martineau, "The Personality of the Retail Store," p. 50.
Stephenson, T.E., op. cit., p. 70.

be all things to all people. If it does, the image is contradictory, vague and confusing to the customer. The results are poor market penetration, the firm being viewed as an alternative supplier, and customers continually switching between firms. In contrast, the favorable image should be sharply defined so that it consistently represents something special to a particular class or segment of the market.

Another problem is the outdated image.⁷³ It creates customer confusion because it is obsolete and misleading. A company can easily find itself hemmed in by an image which no longer represents the firm's true character. For example, International Harvester is typically seen as a farm equipment manufacturer; whereas it is deeply involved in many other activities, including basic steel, motor trucks, off-highway heavy construction equipment, ball bearings, and nuclear and solar power generators, among others. To avoid such

⁷³Carlson, loc. cit.

confusion, more and more steel distributors are adopting the term "steel service center," in lieu of the older appellation "steel warehouse." The new identification more clearly conveys the broad range of services offered by such distributors over and above the role of simply stocking steel.

Earlier it was mentioned that whether or not a concerted effort is made to establish an image, people in contact with the firm will nevertheless form one. Hence it is important that the image be favorable, for image exhibits marked stability.⁷⁴ "An image held by the people who interact with the company is not easily nor quickly improved . . ."⁷⁵ Furthermore, it is much easier to lose a good image than to gain one.⁷⁶ There also appears to be evidence that a negative image is a "more potent determinant" of customer buying

⁷⁴Carlson, op. cit., p. 39.

⁷⁵Spector, op. cit., p. 51.

⁷⁶Berkwitt, op. cit., p. 20.

behavior than a positive one.⁷⁷ In other words, sales are impeded more by a negative image than they are enhanced by a favorable image. This points out the gravity of a laissez-faire approach to image, and the import of diagnosing areas of image weakness.

Because many decision-influencing meanings can emerge from a corporate image,⁷⁸ the same image may have opposite worth or value for different people,⁷⁹ and may attract some customer groups, while repelling others.⁸⁰ "To the extent that it (the company) can group individuals and the organizations they represent in terms of likely common needs, perceptions, thoughts, and feelings, it can adjust effectively with them and attempt to build favorable images in their eyes."⁸¹

⁷⁷Spector, op. cit., p. 47.

⁷⁸Martineau, "Sharper Focus for the Corporate Image," p. 58.

⁷⁹Spector, op. cit., p. 47.

⁸⁰Stephenson, T.E., op. cit., p. 71.

⁸¹Crissy and Kaplan, op. cit., p. 317,
author's insert in brackets.
See also Heidingsfield, op. cit., p. 139.

One important step in building an appropriate image is to ascertain what sort of image should be projected. " . . . the whole idea of a corporate image presupposes the existence of a single, cohesive, unified something that differentiates the corporation from its competitors."⁸² Unfortunately, management often lacks any clear definition of what the most desirable image for their firm should be.⁸³ "Few corporations have decided what they claim to be, or what they aspire to be."⁸⁴ One reason for this is that the firm's executives are too close to their own company to objectively view it as others do.⁸⁵ Thus they lack the information necessary to adjust their corporate image to the needs and wants of their customers.

⁸²Wiebe, op. cit., p. 16.

⁸³Carlson, op. cit., p. 35.
Eells, op. cit., p. 17.

⁸⁴Wiebe, loc. cit.

⁸⁵Eells, loc. cit.
Goeke and Skibbins, op. cit., p. 73.

Such information must be obtained through research.⁸⁶

To build or change image the executive must first know what images and reference points already exist in the minds of his chosen customer groups.⁸⁷

Several marketers have indicated steps in the process of image formation. One suggests: 1) deciding which public the firm wishes to influence; 2) determining how many members of this group do not have a clearly defined image of the company; and 3) researching those who do have an image.⁸⁸ Another prescribes internal research among the firm's executives as the starting point, with such questions as: "What is the distinctive character of our company?" and "What sort of Image should we strive for, to serve our aims?"⁸⁹ A third recommends: 1) determining the kind of image to

⁸⁶Harris, op. cit., p. 62.

⁸⁷Nelson, op. cit., p. 69.

⁸⁸Hill, op. cit., p. 73.

⁸⁹Goeke and Skibbins, op. cit., p. 74.

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project; 2) defining specific objectives; 3) formulating a program of action; 4) establishing an internal education program, and 5) instituting an evaluation program.⁹⁰ Perhaps the most complete program is that designed to answer the following questions:

- 1) Which segments of the market are desired?
- 2) Which segments of the market are actually attracted?
- 3) What is the image of the firm currently held by actual customers?
- 4) What is the image of the firm currently held by non-customers?
- 5) What image components are most important to the desired market segments?
- 6) Is image modification necessary to optimally serve the requirements of desired market segments?⁹¹

⁹⁰Christian, op. cit., p. 80.

⁹¹Berry, op. cit., p. 16.

A diagrammatic representation of this procedure is shown in Figure 4.

No matter how the action program is structured, certain aspects are imperative. One is the nature of the proposed image. Will the desired target market consider the image management wishes to achieve an acceptable and desirable one?⁹²

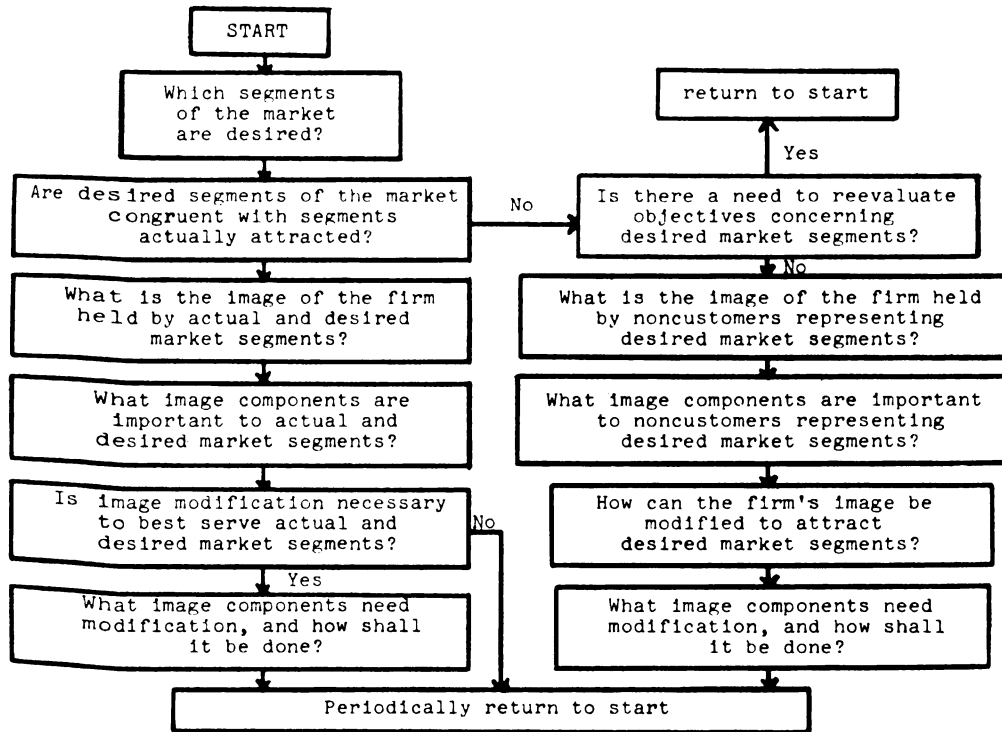
"Knowing that the company is strong on a given factor is not sufficient, since strength may be on a factor that the respondents considered of little importance."⁹³ A major problem in corporate image research is the plethora of findings.⁹⁴ As a result, part of the research problem becomes the isolation of those few key characteristics which, among hundreds of criteria, are most meaningful to the target market, and hopefully are causal in determining purchasing behavior.⁹⁵ "Management

⁹²Carlson, op. cit., p. 35.

⁹³Spector, op. cit., p. 51.

⁹⁴Cohen, Louis, "The Differentiation Ratio in Corporate Image Research," Journal of Advertising Research, 7 (September, 1967), p. 33.

⁹⁵Cohen, loc. cit.
Goeke and Skibbins, op. cit., p. 73.



Adapted from: Berry, Leonard L.,
 "The Components of Department Store
 Image: A Theoretical and Empirical
 Analysis," Journal of Retailing,
 45 (Spring, 1969), p. 18.

Figure 4--An Image-Decision Program

should mobilize the firm's resources toward improvement of particularly important image components, at the expense, if necessary of relatively less important image components."⁹⁶ Determining which indeed are the few crucial elements is accomplished by comparison with the standard set by the respondents' image of their "ideal" company.⁹⁷

Once these key factors have been identified and corrective measures specified for image improvement, a significant but often overlooked facet of implementation is imbuing the entire organization with the new image philosophy. It must become an integral part of the organization.⁹⁸ The corporate image depends upon "the everyday words and actions, particularly the latter, of all those who represent

⁹⁶Berry, op. cit., p. 17.

⁹⁷Cohen, op. cit., p. 32.
Spector, op. cit., p. 51.

⁹⁸Heidingsfield, op. cit., p. 134.

the organization to the various image groupings upon which the firm impinges."⁹⁹ Thus management should view every member of the organization as an image-maker, and obtain commitment to the desired image concept not by "two or three executives at a lower level but by everyone in the company as accurately as possible."¹⁰⁰ Furthermore, to insure that all are "acutely aware" of the image to be projected, company policies and practices (e.g. employee education and management training) must be consonant with the image.¹⁰¹

Finally, since the objective of image-building is to create an impression of the company that will endure for many years, skillful and patient long-term planning is required.¹⁰² Image measurement should be continuous to provide feedback

⁹⁹Stephenson, T.E., op. cit., p. 70.

¹⁰⁰Baker, op. cit., p. 18.

¹⁰¹Stephenson, T.E., op. cit., p. 71.

¹⁰²Baker, op. cit., p. 16.
Heidingsfield, op. cit., p. 143.

on the success of chosen courses of action and permit correction or modification where they have not achieved intended results.¹⁰³ The image most congenial to a chosen market segment must be constantly reinforced.¹⁰⁴ Periodic re-evaluation using follow-up surveys is necessary to assess fluctuation in customer attitudes, changes in market circumstances, and shifts in patronage motives.¹⁰⁵

Thus in implementing a corporate image program it is important to avoid a negative, blurred or outdated image. Both customers and non-customers in the desired market segment should be researched to determine their concepts of the firm's image vis-à-vis an ideal. From these studies, key image elements which are weak may be identified and used

¹⁰³Berry, op. cit., p. 17.

¹⁰⁴Martineau, "The Personality of the Retail Store," p. 48.

¹⁰⁵Berry, loc. cit.
 Heidingsfield, loc. cit.
 Kelly and Stephenson, op. cit., p. 46.

to establish the firm's new image objectives and policies. The entire organization should be coordinated to uniformly execute these activities, and a policy of continuous re-appraisal should be implemented to weigh their impact and determine corrective action.

CHAPTER THREE

IMAGE PROFILES

In this chapter, the positioning of individual variables in the images of steel service centers held by basic mills, the steel service centers themselves, and their customers is examined. Arithmetic means, standard deviations, and standard errors of the means for both "ideal" and "actual" image variables are shown in Appendix D for the basic mills, for the steel service centers, and for the customers. Tests of significant differences between ideal and actual variables for the three groups of respondents appear in Appendix E. These are paired difference tests, which are more sensitive than the more generally used pooled difference test.¹ Graphic representations of the image profiles are reproduced in Appendix F.

¹Freund, John E., Modern Elementary Statistics, 3rd edition, Englewood Cliffs: Prentice-Hall, Inc., 1967, pp. 252, 260 (problem 22).

Keeping in mind the limitations of applying parametric tests to the data, it is reasonable to assume that tests of significant difference at the .0001 level, using the more sensitive paired test can be interpreted as valid differences. This is 500 times more stringent than the .05 level of significance commonly applied in behavioral sciences.

BASIC MILL PROFILES

No significant differences could be inferred for variables one, five, twelve, fourteen, seventeen, nineteen, twenty-one, twenty-five, twenty-seven, or forty. On these variables, we may assume that the steel service centers meet the ideal standard set by basic mills.

Variable one (Question 10) refers to steel service center size. With a mean of 4.8, the "ideal" size is slightly large. Viewed in the perspective of variable five (Question 14), whose "ideal" mean is 4.5, the ideal steel service center is seen as having several branches covering a market area embracing one to three states.

Steel service centers meet mill expectations in the range of product quality (variable twelve) they offer, and in quality not exceeding customers' needs (variable fourteen). Similarly, they carry just the right range of metals and non-metals in inventory (variable seventeen), and permit the customer to reduce his inventory (variable nineteen). Credit availability from steel service centers (variable twenty-one) is also seen to be at the appropriate degree, according to the mills.

Prices are seen to be at the right level, not too low, and have what the mills view as the correct degree of flexibility; while inside salesmen seem to have achieved the appropriate degree of balance between sociability and professionalism.

On exactly half of the variables a significant difference between actual and ideal is shown to exist at the .0001 level of significance.

Steel service centers carry more imported metals than desired by the mills, and earn smaller profits.

All five of the management variables fall significantly short of the mills' desires. Although steel service centers are not seen as being very poorly managed, they are not viewed as being as well managed as mills would like. Mills also see room for better planning, and better defined formal policies. Although mills think steel service center policies should have some slight dependence on mill policies (3.5 mean), they are seen to be a little more independent than desired (4.6 mean). Similarly, where mills would prefer steel service centers to act a bit like mill sales agents, they see the centers acting slightly more as purchasing agents for the customers.

Basic mills see room for improvement in the consistency of quality offered by centers, and in carrying a wider variety of sizes, grades, shapes and qualities of metal in inventory. They would also prefer that steel service centers be less frequently out-of-stock in some items.

Although credit is seen as reasonably easy to obtain, the mills would like steel service centers to communicate more credit policy information to the customer.

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Delivery is seen as quite fast, but could be improved; and better performance in meeting delivery promises is desired. Steel service center prices should also be a bit "fairer," according to basic mills.

Although none of the advertising variables matches the mill "ideal," the greatest divergence is in communication of product-service and problem-oriented information. Mills think steel service centers should provide more of this type of content in their promotion.

In the personal selling variables, mills think there should be more inside-outside team work, greater product knowledge, more provision of technical information and advice, more analysis of customer needs, and better follow-up on customer requests. Furthermore, mills would like to see more customer telephone contacts initiated by inside salesmen.

In summary, the area of greatest divergence between mill expectations and steel service center fulfillment of those expectations is in the management of the center. Fortunately, this need has been ascertained by the Steel Service Center Institute,

which offers a wide variety of management seminars to its members and has received awards for its efforts. Nevertheless, improving management skills, policy formulation and long term planning is a slow process, and in the eyes of the basic mills, this goal has not yet been achieved.

STEEL SERVICE CENTER PROFILES

No significant differences could be inferred for variables two, eight, ten, twenty-five, twenty-seven or forty. It may be assumed that the steel service centers feel they have attained their ideal state for these variables. Variable two suggests they have struck what they feel is the correct balance (mean 1.9) between the proportion of domestic and foreign metals they sell. This contrasts with the view of the basic mills which not only suggests that they sell more imported metals than would be desirable, but also sets a higher ideal proportion of domestic to imported metals (mean 1.4) than steel service centers have. Coincidence on variable eight between the steel service center view of ideal and actual states is a similar situation. Centers think

they have attained the ideal degree of independence from basic mill policies (mean 5.0), whereas mills not only see the centers as significantly far from the mill ideal, but also have a very different view of the ideal degree of dependence (mean 3.5).

Steel service centers also think they have achieved the ideal balance between acting as a mill sales agent versus a customer's purchasing agent (mean 4.3). The mills are fairly close (mean 4.7), in their positioning of actual steel service center centers, but feel centers ideally should act more as mill representatives (mean 3.6) than they currently do.

In two price variables, steel service centers are satisfied they have attained the ideal. They feel that their price level is correctly positioned slightly high (mean 3.0), and that prices have the appropriate degree of flexibility. On these two variables, there is complete concord between steel service centers and basic mills. Steel service centers also are in agreement with the mills that their inside salesmen have achieved the proper balance between sociability and professionalism.

Significant differences between ideal and actual self-image are found at the .0001 level of significance in 31 variables. Nineteen of these are also viewed as significantly different at the .0001 level by basic mills. Steel service centers feel they should earn larger profits, be better managed, plan more thoroughly for the future, and have more clearly defined formal policies. On all these points the mills agree.

The basic mills also agree with the steel service centers that the latter should have less quality variability, carry broader inventory, be less frequently out-of-stock, communicate more credit information to customers, increase delivery speed and meet delivery promises more consistently. There is general agreement that steel service centers should have somewhat "fairer" prices, and provide more product-service and problem-oriented information in advertisements.

In the area of personal selling, mills agree with the steel service center self-evaluation that inside salesmen should initiate more customer telephone contacts, both inside and outside salesmen

should acquire more product knowledge, provide more technical information, advice and analysis of customer needs, act as a coordinated team, and consistently follow-up on customer requests.

It is interesting to note that the steel service centers and basic mills agree that a disparity between ideal and actual performance exists for so many variables, and that their indicated direction for corrective action is so similar.

On a number of additional variables, steel service centers see a need for improvement in their operations to achieve their concept of the ideal, whereas the basic mills feel the steel service centers have already approximated what the mill sees as the ideal.

Steel service centers ideally would like to expand their operations into a larger number of states, whereas mills feel they currently cover the appropriate market area. Similarly, centers would like to offer a wider range of quality choice and carry a broader range of metals and non-metals than mills deem necessary. Also, where mills think that steel service centers are doing an adequate job in

permitting the customer to reduce his inventory, steel service centers feel that there is more room for improvement.

On several other variables, a difference between steel service center ideal and actual self-images exists at the .0001 level of significance, and similar differences are observed in the basic mills' concepts, although at less stringent levels of significance. Steel service centers have not attained their ideals in serving total customer needs, carrying a broad enough range of product lines, offering more first-step production services, and eliminating unreasonably long delivery. They feel they should do somewhat more advertising, use more direct mail and less magazine advertising than they currently use, outside salesmen should contact customers more frequently, and outside salesmen should be more businesslike and professional than they currently are.

In summary, there are a large number of areas of divergence between steel service center ideal and actual self-images. In most of these, the positions of basic mills and steel service centers coincide.

In a few areas, the centers are reaching for goals which are more demanding than those which satisfy the mills. These include wider quality offerings, broader product offerings and wider market coverage. In some other areas, centers are satisfied with their current operations but would have to set different standards if they were to meet mill expectations. These areas typically include variables where one would expect a difference in perspective. Centers act independently, where mills would prefer them to fall more in line with mill policies. Centers act less on the mills' behalf than mills would ideally desire. And centers buy cheaper off-shore metal, where U.S. mills would prefer them to fill all their requirements domestically.

CUSTOMER PROFILES

Customers find congruence between their conceptions of the ideal and actual steel service center on variables one, two, three, eight, twenty-one, thirty-five, forty, and forty-one. They feel that steel service centers are optimally positioned in their size, their product balance between domestic

and imported metals, their profitability, their degree of independence from mill policies, their credit availability, the frequency of calls by outside salesmen, and the balance between sociability and professionalism struck by salesmen. Steel service centers are correct in assuming that they have attained the ideal state in three of these variables: their domestic-imported metal balance, their independence, and the professionalism of inside salesmen. In the light of the customer perspective, centers are incorrect in assuming they should improve their profitability, the frequency of sales calls by outside salesmen, and the degree of professionalism exhibited by outside salesmen. These differences seem reasonable to expect. It is not likely that steel service centers would reduce their efforts toward these goals even though customers see them as satisfactory. This is particularly true of profitability.

Significant departures of actual steel service center image from customers' views of the ideal at the .0001 level may be found in 26 image variables. Agreement with these views by steel service centers

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is found in 23 instances. The three discordant exceptions all occur in the pricing area, again an area where incongruence might reasonably be expected. It may be concluded that steel service centers have an exceptionally accurate view of their own limitations and by narrowing the gap between their ideal and actual self-image in most of these variables would come extremely close to meeting their customers' expectations. In contrast, mills' views of discrepancies between ideal and actual steel service centers coincide with customers' perspectives on only 15 variables. This smaller number might have been anticipated because basic mills do not have as frequent contact as steel service centers do with the final users of steel. In many cases, steel service centers are in daily contact with their customers. Thus, it is reasonable that steel service centers' views of their own limitations would be closer to the customers' views.

Variables upon which customers would prefer improvement include greater emphasis on serving total customer needs, and expanding market territories somewhat. Customers feel that center management

could be better, with more planning for the future. The range of product lines and quality choice should be expanded, while quality level could be more consistent.

Customers see room for improvement in all inventory variables at the .0001 level of significance. These include expansion of the range of metals and non-metals carried, wider variety in sizes, grades, shapes and qualities of steel, permitting further reduction in customer inventory, and less frequent out-of-stock situations.

More communication of credit details to customers, faster delivery, and greater consistency in meeting delivery promises would be appreciated. Customers would also prefer greater use of direct mail advertising containing more product-service and problem-oriented information.

Improvement in salesmen's performance in the customers' view does not single out either inside or outside salesmen individually. They are seen as a team, and coordination of the team's efforts could be improved. Customers wish salesmen to have better product knowledge, and provide more

technical information, advice and analysis of their needs. Customers also would like to see more consistent follow-up on their requests.

Ideally, customers would prefer lower prices, less frequent price fluctuation, and greater frequency in price "specials" being offered. Significant differences between ideal and actual in the steel service centers' self-image could not be found on these three variables at the .0001 level. Interviews with steel service center executives, however, suggest that steel service centers do not feel their prices are high enough to generate desired profits, or low enough to combat off-shore metal prices. They attribute their dilemma to mill reluctance to lower basic metal prices. Interviews also suggest that where possible, centers prefer to scrap end cuts and other materials that could be offered as specials because they feel such "specials" erode their business in prime metal. On the other hand, they agree that price stability is desirable.

In summary, on 23 image variables in which customers would like to see improvement, steel service centers concord. They only differ in their

perspective in the price area, which is to be expected. Alternatively, in a few areas where the steel service centers feel they should improve, customers see change as unnecessary. These areas may be divided into two categories: Those which steel service centers would see as more critical to their own successful operation, and those which they erroneously think the customers would prefer. In the first category, they would not be interested in customers' views. But in the second, they are expending unnecessary and costly effort.

Hence, steel service centers might relax their efforts and reduce their objectives in attempting to present an image of having "fair" prices, and in advertising heavily. Similarly, there appears to be little need to change either the inside or outside salesmen's approach toward customers. Customers see both types of salesmen as having achieved the correct balance between personality or sociability and businesslike professionalism.

It is unlikely that steel service centers would desire to reduce their efforts, in spite of

customer contentment, in such areas as profit expansion, independence from basic mills, broadened offerings of pre-production services, or outside sales call frequency.

THE CHANNEL VIEWPOINT

Taking the total channel of distribution perspective, the areas where image improvement could achieve the greatest results with the minimum effort would be those in which all three channel participants coincide in their perception of a need for improvement. At the .0001 level of significance, these would include variables six, seven, thirteen, sixteen, eighteen, twenty, twenty-two, twenty-four, thirty-two, thirty-three, thirty-eight, thirty-nine, forty-two, forty-three and forty-four. A summary of the paired difference tests at all three channel levels is shown in Table 3. Steel service centers might then be well advised to take the following action:

- 1) Improve management skills and planning capabilities.

TABLE 3
SUMMARY OF PAIRED DIFFERENCE TESTS

VARIABLE	DESCRIPTION	STEEL SERVICE		
		MILL	CENTER	CUSTOMER
1	IS LARGE	C		C
2	CONCENTRATES ON IMPORTED METALS	I	C	C
3	EARNS LARGE PROFITS	I	I	C
4	PROVIDES ONLY LIMITED EMERGENCY SOURCE OF SUPPLY RATHER THAN SERVING TOTAL CUSTOMER NEEDS		I	I
5	OPERATES BRANCHES IN LARGE NUMBER OF STATES	C	I	I
6	IS POORLY MANAGED	I	I	I
7	PLANS THOROUGHLY FOR FUTURE	I	I	I
8	POLICIES ARE INDEPENDENT OF BASIC MILLS' POLICIES	I	C	C
9	DOES NOT HAVE WELL DEFINED FORMAL POLICIES	I	I	
10	ACTS MORE AS A PURCHASING AGENT FOR CUSTOMERS THAN AS A SALES AGENT FOR MILL	I	C	
11	CARRIES A NARROW RANGE OF PRODUCT LINES		I	I
12	OFFERS A WIDE RANGE OF QUALITY CHOICE	C	I	I
13	QUALITY CONSISTENCY IS VARIABLE	I	I	I
14	QUALITY EXCEEDS CUSTOMERS' NEEDS	C		
15	OFFERS FEW PRE-PRODUCTION SERVICES (SLITTING, HEAT- TREATING, ETC.)		I	
16	CARRIES A WIDE VARIETY OF SIZES, GRADES, SHAPES, QUALITIES OF STEEL	I	I	I
17	CARRIES BROAD RANGE OF METALS AND NON-METALS	C	I	I
18	IS FREQUENTLY OUT OF STOCK IN SOME ITEMS	I	I	I
19	PERMITS CUSTOMER TO REDUCE INVENTORY	C	I	I
20	COMMUNICATES DETAILS OF CREDIT POLICIES TO CUSTOMER	I	I	I
21	CREDIT DIFFICULT TO OBTAIN	C		C
22	DELIVERY IS TOO SLOW	I	I	I
23	DELIVERY IS UNREASONABLY LONG		I	I
24	CONSISTENTLY MEETS DELIVERY PROMISES	I	I	I
25	PRICES ARE USUALLY LOW	C	C	I
26	PRICES FLUCTUATE FREQUENTLY WITH LITTLE APPARENT REASON			I
27	PRICES ARE FIXED, NEVER INCREASE FOR "UNUSUAL" OCCASIONS (E.G. RUSH JOB)	C	C	

TABLE 3 (CONT'D)

VARIABLE	DESCRIPTION	STEEL SERVICE		
		MILL	CENTER	CUSTOMER
28	FREQUENTLY OFFERS "SPECIALS"			I
29	PRICES USUALLY SEEM "FAIR"	I	I	
30	ADVERTISES HEAVILY		I	
31	USES DIRECT MAIL ADVERTISING MORE THAN MAGAZINE ADVERTISING		I	I
32	PROVIDES MUCH PRODUCT SERVICE INFORMATION IN ADVERTISEMENTS	I	I	I
33	COMMUNICATES LARGE AMOUNT OF SPECIFIC PROBLEM-ORIENTED INFORMATION	I	I	I
34	ADVERTISING IS OF LITTLE HELP TO CUSTOMER			
35	OUTSIDE SALESMEN CALL FREQUENTLY		I	C
36	INSIDE SALESMEN TELEPHONE FREQUENTLY	I	I	
37	SALESMEN ACT MORE AS AN EXTENSION OF THE BASIC MILLS' SALES FORCE THAN AS SERVICE CENTER REPRESENTATIVES			
38	SALESMEN PROVIDE UP-TO-DATE TECHNICAL INFORMATION, ADVICE AND ANALYSIS OF CUSTOMER NEEDS RATHER THAN SIMPLY TAKING ORDERS	I	I	I
39	INSIDE AND OUTSIDE SALESMEN ARE COORDINATED AS A TEAM	I	I	I
40	INSIDE SALESMEN ARE MORE PERSONAL, FRIENDLY AND SOCIABLE THAN BUSINESSLIKE AND PROFESSIONAL	C	C	C
41	OUTSIDE SALESMEN ARE MORE PERSONAL, FRIENDLY AND SOCIABLE THAN BUSINESSLIKE AND PROFESSIONAL		I	C
42	OUTSIDE SALESMEN ARE WEAK IN PRODUCT KNOWLEDGE	I	I	I
43	INSIDE SALESMEN ARE WEAK IN PRODUCT KNOWLEDGE	I	I	I
44	SALESMEN CONSISTENTLY FOLLOW-UP ON CUSTOMER REQUESTS	I	I	I

C = CONGRUENCE BETWEEN IDEAL AND ACTUAL RESPONSES

I = INCONGRUENCE BETWEEN IDEAL AND ACTUAL RESPONSES

BLANK SPACE = INCONGRUENCE AT THE .05, .01 OR .001 LEVEL
BUT NOT AT THE .0001 LEVEL OF SIGNIFICANCE

- 2) Insure consistent quality levels are maintained.
- 3) Carry a wider variety of sizes, grades, shapes, and qualities of steel in inventory and improve inventory management and control to insure infrequent stock-outs.
- 4) Estimate delivery dates and times more carefully, to insure that delivery promises are consistently met.
- 5) Provide more product-service and specific problem-oriented information in advertising.
- 6) Improve sales management to insure that inside and outside salesmen act as a team, that customer requests are followed up, and that salesmen acquire strong product knowledge.

IMPORTANCE WEIGHTING

Given limited resources, how should the steel service center set priorities for each of these action programs? This question can be answered utilizing the results of Part four

of the research instrument. On the seven-step continuum unimportant-important, each respondent was asked to scale the importance to him of the eight sets of scales he had previously rated. The results are both presented as a table and portrayed graphically in Appendix G.

For both mills and steel service centers, the three most important categories are management, inventory, and salesmen. Customers rank inventory, products, and credit and delivery as the three most important categories. For all respondents, advertising was ranked least in importance.

Basic mills and steel service centers are aligned on the relative importance of all categories except credit and delivery, which steel service centers see as more important than do the mills. Customers see organization and management as much less important than do either basic mills or steel service centers, but rate price considerably more important than do either mills or centers.

It is interesting to note the time perspective implied by these importance rankings. Customer rankings suggest a very immediate perspective, while

steel service centers and mills appear to rank importance with a longer term horizon in mind. Thus, categories ranked most important by customers could be acted upon relatively easily and rapidly by implementing action recommendations (2), (3), and (4); whereas recommendations (1) and (6) take much longer to organize, implement, and produce results. Nevertheless, these two recommendations promise the greatest long run benefit to steel service centers and should be commenced as a continuous program of management and sales education.

CHAPTER FOUR

FACTOR ANALYSIS

Using factor analysis, two concepts are evaluated in this part of the study: the concept of the "ideal" steel service center (the organization with which the respondent would like to do business if such a perfect organization were to exist), and the concept of the "actual" steel service center (the organization with which the respondent currently is doing business). Data describing both were analyzed separately for each of the three sample groups: the mills, the steel service centers, and the customers. Factor analysis was performed on the McMaster University Control Data CDC 6400 computer, using a Biomedical 03M program.¹ This program performs a principal component solution and a varimax orthogonal rotation of the factor matrix. A representative rotated factor matrix

¹Dixon, W.J. ed., Biomedical Computer Programs, Los Angeles: Health Science Computing Facility, School of Medicine, University of California, 1965, pp. 169-184.

is reproduced in Appendix I7. The rotated factor matrices in this chapter will be shown in reduced form, retaining only those factor loadings which are relatively high and pure. These have been chosen as saturations equal to or greater than 0.50.²

Prior to factor analysis, the order of a number of variables was reversed by subtracting the semantic differential score from eight. This was done to orient the variables in the direction which the respondents would probably view as positive, and therefore simplify interpretation. On the questionnaire, some variables deliberately had been negatively phrased so respondents could not check all questions at the same end of the scale. The question phraseology used in factor analysis appears in Appendix H.

In the factor analyses of the 44 variables, cutoff eigenvalues for the factor roots were established to extract ten factors.³ Table 4 lists

²Nunnally, Jum C., Psychometric Theory, New York: McGraw-Hill Book Company, 1967, p. 358.

³Ibid., p. 357.

the eigenvalues and proportions of total variance accounted for.

TABLE 4
FACTOR ANALYSIS PARAMETERS

Sample Set Factor	Eigenvalue	Proportion of Total Variance
Mill Ideal	1.30	61.4%
Mill Actual	1.15	65.2%
SSC Ideal	1.15	49.1%
SSC Actual	1.15	51.6%
Customer Ideal	1.15	53.7%
Customer Actual	1.20	54.3%

Where it appears reasonable, the image factors are named, or given a descriptive title. Table 5 summarizes the factor descriptions.

TABLE 5
SUMMARY OF FACTOR DESCRIPTIONS

FACTOR	IDEAL	ACTUAL
BASIC MILL		
1	Direct Sales Contact	Inventory and Delivery
2	Size	Size
3	Channel Policy	Orderly Prices
4	Directness	Directness
5	Product-Mix	Price-Inventory
6	Good Management	Pricing Tactics
7	Orderly Prices	Mill Orientation
8	Customer Service	Independent Policies
9	Planned Profits	Advertising
10	Advertising	Direct Sales Contact
STEEL SERVICE CENTER		
1	Salesman Helpfulness	Sales Contact Frequency
2	Product-Mix	Product-Mix
3	Advertising	Delivery
4	Salesmen's Attitude	Advertising
5	Size	Size
6	Customer Service	Salesmen's Product Knowledge
7	Salesmen's Loyalty	Price Level
8	Sales Contact Frequency	Independent Policies
9	Price Level	Salesmen's Attitude
10	Price Stability	Price Flexibility
CUSTOMER		
1	Inventory	Inventory
2	Advertising	Advertising
3	Salesmen's Attitude	Salesmen's Attitude
4	Product-Mix	Salesmen's Product Knowledge
5	Domestic-Foreign Metal	Size
6	Sales Contact Frequency	Cost of Possession
7	Size	Quality
8	Independent Policies	Center Orientation
9	Salesmen's Role	Sales Contact Frequency
10	Quality	Price

BASIC MILL FACTORS

MILL CONCEPT OF IDEAL

Reduced rotated factor matrices for the mills' images of the ideal steel service center and actual steel service centers appear in Appendices I1 and I2, respectively. The ten ideal factors have been given the following descriptive titles: direct sales contact, size, channel policy, directness, product-mix, good management, orderly prices, customer service, planned profits, and advertising. In descending order of importance in the mills' view, they are:

- 1) Direct Sales Contact. Mills place greatest stress on the salesmen acting as a team to communicate the cost of possession concept and credit information to end customers.
- 2) Size. Mills favor large, multi-State steel service centers which can assist customers through advertising. Small steel service centers typically feel they cannot afford to do much advertising,

and in fact do not. Hence they may be perceived somewhat less favorably by mills.

- 3) Channel Policy. Mills desire to have steel service centers subscribe to mill philosophies and policies. They want steel service centers to have clearly-defined formal policies, but wish them to fall in line with mill objectives and act more on behalf of the mill, rather than in what the mill would view as an opposing role: acting on behalf of the customer.
- 4) Directness. Mills would like to see both the inside and outside salesmen of the steel service center relating to the customers on a professional, businesslike basis, representing the steel service center, not the mill. Quality should not exceed customers' needs. This factor indicates that the mills desire professionalism over and above winning customers through personality, or giving customers

more than they need. Both direct and straightforward appears to be the desired mode.

- 5) Product-Mix. In the mills' collective view, the ideal steel service center should offer a large product assortment, and have a complete inventory.
- 6) Good Management. The ideal steel service center is well managed when it provides for all its customers' needs.
- 7) Orderly Prices. The ideal steel service center would have stable, high prices, offer few "specials," and easy credit. This factor reflects the basic steel mills' concern over price cutting by steel service centers and its deleterious influence on steel service center profits. It indicates the basics' desire for orderly competition among steel service centers on non-price factors such as credit terms.

- 8) Customer Service. Extremely heavy weight is placed on product knowledge, sales service, follow-up by salesmen, and product availability.
- 9) Planned Profits. In the mills' view, the main element in profitable operation of a steel service center is planning. With luck, a steel service center may make handsome profits for a few years, but to consistently earn good profits requires careful, thorough planning. The mills' guarantee of long term success is to have strong, profitable steel service centers selling their steel.
- 10) Advertising. Factor ten suggests that advertising is important in informing customers about products, services, and problems the steel service center can solve. The mills would like steel service centers to provide customers with many first-step processing services and advertise their offerings widely.

MILL CONCEPT OF ACTUAL

Appendix I2 shows the reduced factor matrix for the basic mills' image of the actual steel service centers with which they deal. The factors have been named: inventory and delivery, size, orderly prices, directness, price-inventory, pricing tactics, mill orientation, independent policies, advertising, and direct sales contact. In descending order of importance in the mills' view, these factors are:

- 1) Inventory and Delivery. Mills see the inside-outside sales team as an important unit in providing these services. This factor suggests that in the mills' view, steel service centers are doing a good job of getting products to the customer when he wants them. Comparison with ideal factor one suggests that salesmen still have a way to go in communicating the "cost of possession" concept to customers.
- 2) Size. Actual factor two matches ideal factor two in suggesting that the mills

tend to deal with large, multi-State steel service centers which do a substantial amount of advertising and offer a wide product and quality assortment.

- 3) Orderly Prices. Actual factor three is comparable to ideal factor seven. Mills tend to deal more with the steel service centers which maintain high, stable prices and infrequently offer "specials."
- 4) Directness. Actual factor four matches ideal factor four, coming close to mills' expectations that the sales force should use a direct, businesslike approach and not rely on gimmicks, such as offering superfluous quality.
- 5) Price-Inventory. Factor five suggests that although steel service centers with which the mills deal carry a broad inventory, their pricing is inflexible when special situations arise.
- 6) Pricing Tactics. The major difference between actual factor six and its equivalent ideal factor nine is in steel service

center profitability. Where mills would like to see the steel service centers earning large profits, they feel that the centers with which they deal earn lower profits, and this is associated in factor analysis with easy credit. The contrast between these factors indicates the long term planning view the mills take, versus the apparent short-run view of the steel service centers.

- 7) Mill Orientation. Factor seven shows that the mills see steel service centers as preferring domestic metals and acting more as sales agents for the mill than as purchasing agents for the customers. There is a contrast in the structure of this factor compared to ideal factor three. The latter is a total view of channel policy, whereas the former appears to be a temporally more immediate tactical approach.

- 8) Independent Policies. Ideally the mills would prefer steel service centers to have policies which align with those of the mills, but they see their actual steel distributors conducting their operations independently of basic mills' policies, and the service centers' salesmen representing the interests of the centers, not the mills.
- 9) Advertising. Factor nine is a favorable one. The basic mills see the well managed steel service centers through which they sell as communicating product-service and credit information to customers both directly and through advertisements.
- 10) Direct Sales Contact. In factor ten, mills see steel service centers conducting direct sales contacts through salesmen and direct mail promotion. It should be noticed that this factor is last in relative strength or importance for the actual rating, whereas these elements had primary importance for the ideal. Furthermore,

these elements stand alone rather than being associated with other direct forms of customer assistance.

In summary, although there are some similarities between the basic mills' view of actual and ideal steel service centers, the two images do differ in composition. A summary of basic mill factors appears in Table 6. It may be inferred that, in general, the basic steel mills would prefer centers to have a better management perspective of their business than they now have. This would involve a longer range perspective, thorough careful planning and more profitable operation. The ranking of factors indicates that where steel service centers currently concentrate on delivery, mills would prefer to see emphasis on a coordinated sales effort. Where steel service centers are seen as relatively independent operations, the mills would prefer to see them participating in a more unified and cohesive channel with well formulated policies that fit into the mills' strategy.

TABLE 6
SUMMARY OF BASIC MILL FACTORS

VARIABLE	FACTOR										INPUT PHRASING
	1	2	3	4	5	6	7	8	9	10	
1		IA									IS LARGE
2							A				CONCENTRATES ON DOMESTIC METALS
3						A			I		EARN LARGE PROFITS
4						I					SERVES TOTAL CUSTOMER NEEDS RATHER THAN PROVIDING ONLY A LIMITED EMERGENCY SOURCE OF SUPPLY
5		IA									OPERATES BRANCHES IN LARGE NUMBER OF STATES
6						I			A		IS WELL MANAGED
7									I		PLANS THOROUGHLY FOR FUTURE
8			I					A			POLICIES ARE INDEPENDENT OF BASIC MILLS' POLICIES
9			I								HAS WELL DEFINED FORMAL POLICIES
10			I				A				ACTS MORE AS A PURCHASING AGENT FOR CUSTOMERS THAN AS A SALES AGENT FOR MILL
11					I						CARRIES A BROAD RANGE OF PRODUCT LINES
12		A									OFFERS A WIDE RANGE OF QUALITY CHOICE
14				IA							QUALITY EXCEEDS CUSTOMER'S NEEDS
15										I	OFFERS MANY PRE-PRODUCTION SERVICES (SLITTING, HEAT-TREATING, ETC.)
16					IA						CARRIES A WIDE VARIETY OF SIZES, GRADES, SHAPES, QUALITIES OF STEEL
17		A			I						CARRIES BROAD RANGE OF METALS AND NON-METALS
18	A							I			IS NOT FREQUENTLY OUT OF STOCK
19	I										PERMITS CUSTOMER TO REDUCE INVENTORY
20	I								A		COMMUNICATES DETAILS OF CREDIT POLICIES TO CUSTOMERS
21						A	I				CREDIT EASY TO OBTAIN
22	A										DELIVERY IS NOT TOO SLOW
23	A										DELIVERY IS NOT UNREASONABLY LONG
24	A										CONSISTENTLY MEETS DELIVERY PROMISES
25			A				I				PRICES ARE USUALLY LOW
26			A				I				PRICES DO NOT FLUCTUATE FREQUENTLY WITH LITTLE APPARENT REASON
27					A						PRICES ARE FIXED, NEVER INCREASE FOR "UNUSUAL" OCCASIONS (E.G. RUSH JOBS)
28			A				I				FREQUENTLY OFFERS "SPECIALS"
30		A									ADVERTISES HEAVILY
31										A	USES DIRECT MAIL ADVERTISING MORE THAN MAGAZINE ADVERTISING
32									A	I	PROVIDES MUCH PROMPT SERVICE INFORMATION IN ADVERTISEMENTS
33										I	COMMUNICATES LARGE AMOUNT OF SPECIFIC PROBLEM-ORIENTED INFORMATION
34		I									ADVERTISING IS OF MUCH HELP TO CUSTOMER
35	I								A		OUTSIDE SALESMEN CALL FREQUENTLY
36	I									A	INSIDE SALESMEN TELEPHONE FREQUENTLY
37				I				A			SALESMEN ACT MORE AS SERVICE CENTER REPRESENTATIVES THAN AS AN EXTENSION OF THE BASIC MILLS' SALES FORCE
38								I	A		SALESMEN PROVIDE UP-TO-DATE TECHNICAL INFORMATION, ADVICE AND ANALYSIS OF CUSTOMER NEEDS RATHER THAN SIMPLY TAKING ORDERS
39	IA										INSIDE AND OUTSIDE SALESMEN ARE COORDINATED AS A TEAM
40				IA							INSIDE SALESMEN ARE MORE BUSINESSLIKE AND PROFESSIONAL THAN PERSONAL, FRIENDLY AND SOCIABLE
41				IA							OUTSIDE SALESMEN ARE MORE PERSONAL, FRIENDLY AND SOCIABLE THAN BUSINESSLIKE AND PROFESSIONAL
42								I	A		OUTSIDE SALESMEN ARE STRONG IN PRODUCT KNOWLEDGE
43								I	A		INSIDE SALESMEN ARE STRONG IN PRODUCT KNOWLEDGE
44								I			SALESMEN CONSISTENTLY FOLLOW-UP ON CUSTOMER REQUESTS

I = FACTOR ELEMENT IN "IDEAL" IMAGE
A = FACTOR ELEMENT IN "ACTUAL" IMAGE

STEEL SERVICE CENTER SELF-IMAGE FACTORS

STEEL SERVICE CENTER IDEAL SELF-IMAGE

The reduced rotated factor matrices of the steel service centers' ideal and actual self-images appear in Appendices I3 and I4. The factor structures of these two self-images may be compared more easily in the summary Table 7. Appendix I3 represents the elements of the image which the steel service centers ideally would like to have. The ten ideal factors have been given the following descriptive titles: salesman helpfulness, product-mix, advertising, salesmen's attitude, size, customer service, salesmen's loyalty, sales contact frequency, price level, and price stability. In descending order of importance in the steel service centers' view, they are:

- 1) Salesman Helpfulness. Good management is typified by a strong sales team, well versed in product knowledge, analyzing customer needs and consistently following-up customer requests.

TABLE 7
SUMMARY OF STEEL SERVICE CENTER FACTORS

VARIABLE	FACTOR										INPUT PHRASING
	1	2	3	4	5	6	7	8	9	10	
1					IA						IS LARGE
2					A						EARNS LARGE PROFITS
5					IA						OPERATES BRANCHES IN LARGE NUMBER OF STATES
6	I										IS WELL MANAGED
8								A			POLICIES ARE INDEPENDENT OF BASIC MILLS' POLICIES
11		IA									CARRIES A BROAD RANGE OF PRODUCT LINES
12		IA									OFFERS A WIDE RANGE OF QUALITY CHOICE
16		IA									CARRIES A WIDE VARIETY OF SIZES, GRADES, SHAPES, QUALITIES OF STEEL
17		IA									CARRIES BROAD RANGE OF METALS AND NON-METALS
21						I					CREDIT EASY TO OBTAIN
22			A			I					DELIVERY IS NOT TOO SLOW
23			A			I					DELIVERY IS NOT UNREASONABLY LONG
24			A								CONSISTENTLY MEETS DELIVERY PROMISES
25							A		I		PRICES ARE USUALLY LOW
26							A				PRICES DO NOT FLUCTUATE FREQUENTLY WITH LITTLE APPARENT REASON
27										IA	PRICES ARE FIXED, NEVER INCREASE FOR "UNUSUAL" OCCASIONS (E.G. RUSH JOBS)
28									I		FREQUENTLY OFFERS "SPECIALS"
29							A				PRICES USUALLY SEEM "FAIR"
30			I	A							ADVERTISES HEAVILY
31			I								USES DIRECT MAIL ADVERTISING MORE THAN MAGAZINE ADVERTISING
32			I	A							PROVIDES MUCH PRODUCT SERVICE INFORMATION IN ADVERTISEMENTS
33			I	A							COMMUNICATES LARGE AMOUNT OF SPECIFIC PROBLEM-ORIENTED INFORMATION
34				A							ADVERTISING IS OF MUCH HELP TO CUSTOMER
35	A							I			OUTSIDE SALESMEN CALL FREQUENTLY
36	A							I			INSIDE SALESMEN TELEPHONE FREQUENTLY
37							I				SALESMEN ACT MORE AS SERVICE CENTER REPRESENTATIVES THAN AS AN EXTENSION OF THE BASIC MILLS' SALES FORCE
38	I					A					SALESMEN PROVIDE UP-TO-DATE TECHNICAL INFORMATION, ADVICE AND ANALYSIS OF CUSTOMER NEEDS RATHER THAN SIMPLY TAVING ORDERS
39	IA										INSIDE AND OUTSIDE SALESMEN ARE COORDINATED AS A TEAM
40				I					A		INSIDE SALESMEN ARE MORE BUSINESSLIKE AND PROFESSIONAL THAN PERSONAL, FRIENDLY AND SOCIABLE
41				I					A		OUTSIDE SALESMEN ARE MORE PERSONAL, FRIENDLY AND SOCIABLE THAN BUSINESSLIKE AND PROFESSIONAL
42	I					A					OUTSIDE SALESMEN ARE STRONG IN PRODUCT KNOWLEDGE
43	I					A					INSIDE SALESMEN ARE STRONG IN PRODUCT KNOWLEDGE
44	IA										SALESMEN CONSISTENTLY FOLLOW-UP ON CUSTOMER REQUESTS

I = FACTOR ELEMENT IN "IDEAL" IMAGE
A = FACTOR ELEMENT IN "ACTUAL" IMAGE

- 2) Product-Mix. Factor two includes having a complete product line and inventory.
- 3) Advertising. The ideal steel service center would advertise heavily; rely mainly on direct mail and handouts, using a strong problem-solving theme, and most importantly providing a lot of product-service information.
- 4) Salesmen's Attitude. Factor four re-presents the desired approach by both inside and outside salesmen as business-like and professional rather than personal and sociable.
- 5) Size. Factor five indicates the ideal firm should be a multi-State operation, and large.
- 6) Customer Service. Factor six suggests that the ideal steel service center provides fast delivery and easy credit.
- 7) Salesmen's Loyalty. Factor seven designates that salesmen ideally should represent the steel service center, not the mill.

- 8) Sales Contact Frequency. Frequent sales calls by outside men, and telephone calls by inside men are desired by steel service centers.
- 9) Price Level. Price "specials" should not be offered frequently, and prices should be high.
- 10) Price Stability. Factor ten indicates that prices should be stable, even during unusual situations.

The ideal self-image of steel service centers has a relatively simple factor structure. Four factors are related to personal selling, two to price, and the remaining ones to product, service, advertising, and size. This is what the steel service centers think they should be. The image they think they actually project follows.

STEEL SERVICE CENTER ACTUAL SELF-IMAGE

Appendix I4 shows the reduced factor matrix for the steel service centers' actual self-image. The factors have been named: sales contact frequency,

product-mix, delivery, advertising, size, salesmen's product knowledge, price level, independent policies, salesmen's attitude, and price flexibility. In descending order of importance in the steel service centers' view, these factors are:

- 1) Sales Contact Frequency. Factor one includes teamwork between inside and outside salesmen, and follow-up on customer requests. But in this factor, they are associated with sales call frequency, as opposed to problem-solving and strong product knowledge in the ideal situation.
- 2) Product-Mix. Factor two in the actual image is identical to the steel service center ideal factor two.
- 3) Delivery. Factor three consists of three heavily loaded pure delivery variables. Delivery is considered more important in the actual self-image than in the ideal, where it ranks sixth.
- 4) Advertising. In the case of the actual self-image, the type of advertising is seen as more relevant than the media in which advertising is done.

- 5) Size. This factor appears in the same position as the size factor in the ideal self-image. It includes multi-State operation and concentration on domestic metals.
- 6) Salesmen's Product Knowledge. In factor six, problem-solving by salesmen is associated with strength in product knowledge. These elements stand alone, whereas in the ideal self-image they were part of the most important factor one.
- 7) Price Level. Factor seven indicates steel service centers see their prices as fair, stable, and reasonably high.
- 8) Independent Policies. In factor eight, independence stands alone. It is interesting to note that this element did not weigh heavily in the steel service centers' ideal self-image.
- 9) Salesmen's Attitude. This factor is identical to factor four in the steel service centers' ideal self-image. However, it does not assume as great

importance as the steel service centers would like it to do.

- 10) Price Flexibility. Factor ten is the antithesis to factor ten in the ideal self-image. Where steel service centers would like prices to be stable, even during unusual situations, they actually consider prices to be flexible.

In summary, ideally steel service centers see good management associated with a well coordinated, strong sales team, but the good management variable does not appear in the actual self-image. Where steel service centers would like sales efforts to be of a problem-solving nature, providing technical information, advice and customer needs analysis, they have not yet reached this goal and concentrate mainly on sales call frequency. There also seems to be room for improvement of salesmen's attitude toward a more businesslike, professional approach. On the other hand, delivery and independence from mill dominance seem to have acquired more importance than the centers consider necessary, and prices are more flexible than they desire.

CUSTOMER IMAGE FACTORS

CUSTOMER CONCEPT OF IDEAL

Reduced rotated factor matrices representing customers' images of the ideal and actual steel service center appear in Appendices I5 and I6. These two matrices are merged in summary form for easier comparison in Table 8. The ten ideal image factors have been given the descriptive titles: inventory, advertising, salesmen's attitude, product-mix, domestic-foreign metal, sales contact frequency, size, independent policies, salesmen's role, and quality. In descending order of importance in the customers' view, they are:

- 1) Inventory. The ideal steel service center is a well managed firm, with reasonably fast delivery when promised, price stability, and rare out-of-stock situations.
- 2) Advertising. Factor two indicates that advertising should be through direct mail and handouts, should provide product-service, problem-oriented information, and should be beneficial to the customer.

TABLE 8
SUMMARY OF CUSTOMER FACTORS

VARIABLE	FACTOR										INPUT PHRASING
	1	2	3	4	5	6	7	8	9	10	
1					A		I				IS LARGE
2					I						CONCENTRATES ON DOMESTIC METALS
3					A		I				EARNES LARGE PROFITS
4						A					SERVES TOTAL CUSTOMER NEEDS RATHER THAN PROVIDING ONLY A LIMITED EMERGENCY SOURCE OF SUPPLY
5					A		I				OPERATES BRANCHES IN LARGE NUMBER OF STATES
6	I										IS WELL MANAGED
7						A					PLANS THOROUGHLY FOR FUTURE
8								I			POLICIES ARE INDEPENDENT OF BASIC MILLS' POLICIES
10								A			ACTS MORE AS A PURCHASING AGENT FOR CUSTOMERS THAN AS A SALES AGENT FOR MILL
11				I		A					CARRIES A BROAD RANGE OF PRODUCT LINES
12				I		A					OFFERS A WIDE RANGE OF QUALITY CHOICE
14							A		I		QUALITY EXCEEDS CUSTOMERS' NEEDS
16				I		A					CARRIES A WIDE VARIETY OF SIZES, GRADES, SHAPES, QUALITIES OF STEEL
17				I							CARRIES BROAD RANGE OF METALS AND NON-METALS
18	IA										IS NOT FREQUENTLY OUT OF STOCK
19						A					PERMITS CUSTOMER TO REDUCE INVENTORY
21							A				CREDIT EASY TO OBTAIN
22	IA										DELIVERY IS NOT TOO SLOW
23	IA										DELIVERY IS NOT UNREASONABLY LONG
24	IA										CONSISTENTLY MEETS DELIVERY PROMISES
25									A		PRICES ARE USUALLY LOW
26	IA										PRICES DO NOT FLUCTUATE FREQUENTLY WITH LITTLE APPARENT REASON
28									A		FREQUENTLY OFFERS "SPECIALS"
30		A									ADVERTISES HEAVILY
31	IA										USES DIRECT MAIL ADVERTISING MORE THAN MAGAZINE ADVERTISING
32	IA										PROVIDES MUCH PRODUCT SERVICE INFORMATION IN ADVERTISEMENTS
33	IA										COMMUNICATES LARGE AMOUNT OF SPECIFIC PROBLEM-ORIENTED INFORMATION
34	I										ADVERTISING IS OF MUCH HELP TO CUSTOMER
35						I			A		OUTSIDE SALESMEN CALL FREQUENTLY
36						I			A		INSIDE SALESMEN TELEPHONE FREQUENTLY
38									I		SALESMEN PROVIDE UP-TO-DATE TECHNICAL INFORMATION, ADVICE AND ANALYSIS OF CUSTOMER NEEDS RATHER THAN SIMPLY TAKING ORDERS
39									IA		INSIDE AND OUTSIDE SALESMEN ARE COORDINATED AS A TEAM
40			IA								INSIDE SALESMEN ARE MORE BUSINESSLIKE AND PROFESSIONAL THAN PERSONAL, FRIENDLY AND SOCIABLE
41			IA								OUTSIDE SALESMEN ARE MORE PERSONAL, FRIENDLY AND SOCIABLE THAN BUSINESSLIKE AND PROFESSIONAL
42				A					I		OUTSIDE SALESMEN ARE STRONG IN PRODUCT KNOWLEDGE
43				A					I		INSIDE SALESMEN ARE STRONG IN PRODUCT KNOWLEDGE
44									I		SALESMEN CONSISTENTLY FOLLOW-UP ON CUSTOMER REQUESTS

I = FACTOR ELEMENT IN "IDEAL" IMAGE
A = FACTOR ELEMENT IN "ACTUAL" IMAGE

- 3) Salesmen's Attitude. Factor three is the businesslike, professional attitude of the steel service centers' salesmen.
- 4) Product-Mix. The ideal steel service center should have a broad product-mix and a wide range of products in stock.
- 5) Domestic-Foreign Metal. Standing alone in factor five is one variable. The ideal steel service center should concentrate on domestic metals, in the customers' view.
- 6) Sales Contact Frequency. Factor six indicates that customers prefer frequent calls from both inside and outside salesmen.
- 7) Size. The ideal steel service center should be large, earn large profits, and operate branches in many States.
- 8) Independent Policies. The sole element in factor eight suggests customers like to deal with steel service centers whose policies are independent of the basic mills' policies.

- 9) Salesmen's Role. Factor nine deals strictly with the role of salesmen. The ideal steel service centers' salesmen should provide technical information, advice, and analysis of customer needs, be strong in product knowledge, consistently follow-up on customer requests, and be coordinated as inside-outside sales teams.
- 10) Quality. Factor ten suggests quality should exceed customers' needs.

CUSTOMER CONCEPT OF ACTUAL

Appendix I6 shows the reduced factor matrix for the customers' image of the actual steel service centers with which they deal. The factors have been named: inventory, advertising, salesmen's attitude, salesmen's product knowledge, size, cost of possession, quality, center orientation, sales contact frequency, and price. In descending order of importance in the customers' view, they are:

- 1) Inventory. This factor is identical to ideal factor one with the single exception that customers do not view the steel service centers as being well managed.
- 2) Advertising. As in the ideal case, factor two is also advertising. However, here it is not viewed as being as helpful as desired.
- 3) Salesmen's Attitude. This factor shows a very significant difference from its equivalent, ideal factor three. Both inside and outside salesmen are viewed as being more personal, friendly, and sociable than businesslike and professional. This is the opposite to what customers view as the ideal situation.
- 4) Salesmen's Product Knowledge. Factor four isolates salesmen's strong product knowledge but, unlike ideal factor nine, does not indicate as much of a customer orientation in the salesmen's performance.

- 5) Size. In comparison with its counterpart, factor seven in the ideal image, this factor is the exact opposite to what the customers would ideally desire. The steel service centers from which they buy are too small, earn small profits, and are not multi-State operations.
- 6) Salesmen's Product Knowledge. Factor six is quite favorable. Actual firms from which the customers buy are seen as serving total customer needs, planning thoroughly for the future, carrying a broad product and quality range, having ample inventory, and permitting the customer to reduce inventory. The cost of possession concept appears to have been well adopted by customers.
- 7) Quality. Factor seven suggests customers feel that quality does exceed their needs, but credit is difficult to obtain. Communication of credit policies to customers may be needed to correct this impression.

- 8) Center Orientation. Factor eight indicates that customers feel the steel service centers are acting on the customers' behalf rather than being sales agents for the mills.
- 9) Sales Contact Frequency. Factor nine in the customers' image shows that the inside and outside salesmen are seen to be acting as a team, and call frequently.
- 10) Price. Steel service centers are seen as selling at low prices and frequently offering specials.

In summary, several of the factors are quite similar between ideal and actual. The most important first two factors are very much alike. However, the steel service centers are viewed as differing radically from what the customers would like in their size and in the way their salesmen relate to the customers. They are seen as too small and unprofitable, and salesmen are seen as relying too much on being friendly "good fellows" instead of being businesslike and professional.

CHAPTER FIVE

A BASIC MODEL OF IMAGE

In this chapter, an index representing the degree to which the actual steel service center image approximates the ideal image is derived, an attempt is made to determine whether image congruity is related to profitability, and a simplified tool for image measurement is developed.

THE INDEX OF INCONGRUITY

In several awareness and attitude studies conducted for the Steel Service Center Institute by Meldrum and Fewsmith, Inc., in 1963, 1965, and 1967, questions pertaining to steel service center image were rated by respondents on scales such as "excellent--good--poor--not familiar," and "great influence--some influence--slight influence--no influence." Implications drawn from these scales suggested certain action should be taken based on absolute scale "goodness." However, these conclusions did not take into account the possibility

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that customers might view some scales as having very little importance; or that although they checked "poor," their expectations or standards for an ideal service center might be no higher than that scale position. In either case, a conclusion recommending greater effort by steel service centers to improve the characteristic scaled would be erroneous.

To avoid this problem, in this study respondents were asked to rate not only their impressions of the "actual" steel service center, but also their expectations of the "ideal" steel service center. This dual rating then provided a measure of deviation from or incongruity with an ideal standard. Furthermore, measures of relative importance of various sets of scales were also rated by respondents to insure that large disparities on relatively unimportant scales were not given disproportionately great emphasis in interpretation.

The use of an ideal standard for comparison provides an excellent means of gauging how "good" or "poor" a job of meeting total customers' needs a particular steel service center might be doing.

1

1

1

"Actual" scores on each scale were subtracted from "ideal" scores on corresponding scales, and each difference was weighted by the relative importance of the scale according to the individual respondent's assessment in part three of the research instrument. The sum of weighted differences over all scales would then represent how closely the steel service center met his expectations. The smaller the number, the more nearly perfect the steel service center's image; the larger the sum, the greater the steel service center's disparity from ideal. For this reason, the resulting score was designated as the "Index of Incongruity."

THE IMAGE-PROFIT RELATIONSHIP

One of the questions the research was designed to explore was: Is there a relationship between the image that distributors project and the profits they earn? Using the "Index of Incongruity" it was expected that the curvilinear relationship illustrated in Figure 5 might be obtained.

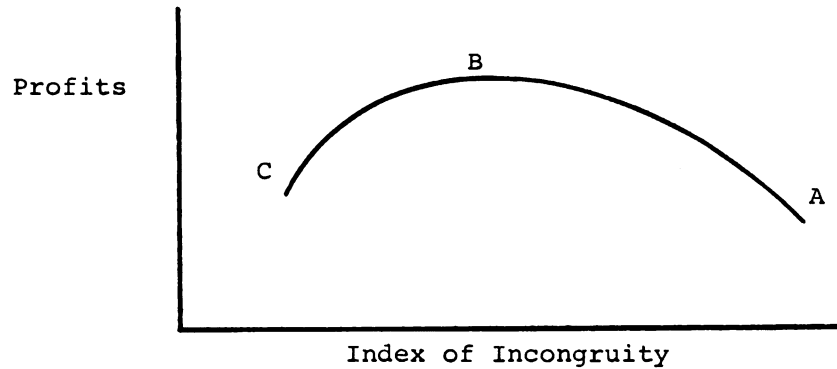


Figure 5--Expected Image-Profit Relationship

Moving from position A to B, the steel service center better approximates the customer's needs and wants. In so doing, its customers become more loyal and buy more from it, its costs of servicing them decrease, and profits increase. However, at point B it becomes more difficult and more costly to approximate closely the customer's needs, and the steel service center's marginal costs approach or begin to exceed marginal revenues. Progressing from position B to C, marginal profits decrease. Better matching the customer's needs at this stage means the steel service center is practically buying customers.

To test this relationship, Indices of Incongruity were calculated for all customer respondents and these were compared with the profits reported by steel service centers who had submitted their customers' names. The data were analyzed by a General Electric Polycom computer using the "CURFIT" program which performs a least squares curve fit for the following six functions:

$$y = a + bx$$

$$y = ae^{bx}$$

$$y = ax^b$$

$$y = a + \frac{b}{x}$$

$$y = \frac{1}{a + bx}$$

$$y = \frac{x}{ax + b}$$

The program specifies the parameters a and b, and the index of determination for each function.¹

¹See GE-400 Series Time-Sharing Library Programs, Bulletin CPB-1487A, General Electric Information Systems, Revised June, 1969, Program M008, pp. 49-51.

In all six cases, the coefficient of determination was too small to infer any relationship between customers' images of their steel service centers, and the corresponding steel service centers' profits. Inability to find such a relationship might be attributed to a number of factors:

- (a) The small number of customer respondents for each steel service center might not provide an accurate enough assessment of image for a particular center due to a wide range of indices. On average, 5.5 customers responded for each steel service center.
- (b) Profits reported by centers were for the year 1968, hence might not have been representative, although it was requested that if 1968 were an unusually high or low profit year the center should indicate a representative average.
- (c) Due to the privileged nature of profitability information, profit levels could not be divided into sufficiently small

increments to provide a good range on the dependent variable. Six profit categories were used, one of which was "loss," and so infrequently checked that only five categories were relevant in the regression.

- (d) Profitability of a steel service center depends on a number of variables which may assume predominant influence even in the presence of a very favorable image in the customers' eyes. For example, the financial manager of the operation can play a crucial role in profit conservation. Similarly, a steel service center which is effective in meeting customer needs and wants may be ineffective in purchasing, have poor pre-production costing, or be lax in inventory control, all of which could reduce profits considerably.

The results of this area of the study provide useful information upon which further research may be designed to test the image-profit relationship in depth.

OPERATIONAL IMAGE MEASUREMENT

In chapter two it was shown that identification of a firm's current image is a necessary prerequisite to changing or improving image. Most firms, however, would recoil from the prospect of preparing, mailing, editing, and interpreting as extensive a research instrument as was used in this study. One alternative would be to hire a marketing research house to conduct such a study. But the use of such consultants is expensive. To the small steel service center, expenditures for full-scale research studies, particularly in what it may consider an etherial area such as image measurement, are beyond consideration. For this reason, an attempt was made to formulate an operational instrument which would be short, inexpensive to administer, and simple to use and interpret.

Since the Index of Incongruity incorporates an ideal standard against which actual steel service centers' performance was measured, and includes a weighting of importance for the various image categories, it was used as a dependent variable against

which all raw "actual" image scores were regressed. In this way, the few "actual" steel service center image variables which most parallel the Index of Incongruity could be isolated and used in a "mini-questionnaire" to provide approximately the same information as the Index, with a great deal more parsimony.

Regressions were performed on the McMaster University Control Data CDC 6400 computer using the BMD03R Multiple Regression with Case Combinations program.² This program performs multiple regression and correlation analyses using least squares estimates of regression coefficients in a modification of Efroymsen's stepwise procedure.³

²Dixon, W.J., ed., Biomedical Computer Programs, Los Angeles: Health Science Computing Facility, School of Medicine, University of California, 1965, pp.258-275D.

³The author is indebted to Dr. M.L. Tiku, Applied Mathematics Department, McMaster University, for his expert guidance in the development of a reduced function with this regression technique.

REDUCED VARIABLES REPRESENTING CUSTOMER IMAGE

A linear multiple regression was initially fitted to the 44 concomitant "actual" customer variables. The variance F-value of the regression against error was found to be 3.4834, well above the critical value of 1.59 with 44 and 317 degrees of freedom at the 1% level of significance.⁴ This is an indication that the fitted regression represents the data rather well. It is reproduced in Appendix J1.

The 44 regression coefficients were examined and all except six were found to be small. A linear multiple regression was then fitted to the corresponding six variables. The F-value calculated from the difference of the new and the previous error sum of squares against the previous error sum of squares was found to be 0.704, well below the critical F-value at the 1% level of significance.⁵ This is an indication that the regression based on

⁴Pearson, E.S., and Hartley, H.O., Biometrika Tables for Statisticians, Cambridge: Cambridge University Press, 1954, p. 161.

⁵Rao, C. Radhakrishna, Advanced Statistical Methods in Biometric Research, New York: John Wiley & Sons, Inc., 1952, pp. 102-127.

six variables represents the data just as well as that based on 44 variables. The reduced regression is shown in Appendix J2.

The questions that appear in the regression formula as best representing the Index of Incongruity relate to perceptions of how well the steel service center is managed, whether it plans thoroughly for the future, variability in quality consistency, frequency of out-of-stock situations, consistency in meeting delivery promises, and coordination of inside and outside salesmen as a team.

The "Basic Incongruity Index" may thus be calculated from this regression equation, using the original "actual" questions (question numbers of variables on the research instrument appear within the square brackets) of the research instrument:

$$\begin{aligned} BII_c = & 429.6 + 10.9[15] + 10.3[22] + 8.5[27] - 14.1[33] - 12.9[16] \\ & - 12.1[48] \end{aligned} \quad (1)$$

The minimum attainable score using formula (1) is 187.7, and the maximum, 598.7. Converting these values to a 0 - 10 scale, formula (1) becomes:

$$BII_c = \frac{241.9 + 10.9[15] + 10.3[22] + 8.5[27] - 14.1[33] - 12.9[16] - 12.1[48]}{41.1} \quad (2)$$

The closer this score is to zero, the greater the congruity (or less the incongruity) between ideal and actual images. Thus a score less than five indicates the image of the steel service center held by customers is favorable, whereas a score greater than five indicates an unfavorable image.

These six variables were subsequently submitted to factor analysis, and it was discovered that they loaded most heavily on one factor only. Thus the customers' view of image congruity, as represented by these six variables, may be considered unidimensional. That is, the index of incongruity may be reduced to a general attitude of "favorableness," represented by six variables.

REDUCED VARIABLES REPRESENTING STEEL SERVICE CENTER
SELF-IMAGE

A linear multiple regression was fitted to the 44 concomitant "actual" steel service center variables. The F-value of the regression against error was 8.5601, well above the critical value of 1.59 with 44 and 391 degrees of freedom at the 1% level of significance. It may be concluded that the fitted regression represents the data rather well. It is reproduced in Appendix J3. Using the same technique described on page 146, seven variables were extracted and a new linear multiple regression was fitted, yielding an F-value of 1.258, sufficiently lower than the critical value at the 1% level of significance to indicate that the regression based on seven variables represents the data as well as that based on 44 variables. The reduced regression appears in Appendix J4.

The variables in the regression include three which also appeared in the customer regression equation (2), namely how well managed the steel service center is perceived to be, its consistency

in meeting delivery promises, and the coordination of inside and outside salesmen as a team. The other variables include the range of product lines, credit policy communication, delivery speed, and frequency of inside salesmen's telephoning.

The "Basic Incongruity Index" for the steel service centers' self-image is represented by the following equation using seven "actual" questions (question numbers of variables on the research instrument appear within the square brackets) from the research instrument:

$$BII_{SSC} = 442.3 + 20.3[31] + 15.3[15] + 13.8[20] - 14.8[33] \\ - 12.8[48] - 10.4[29] - 9.2[45] \quad (3)$$

The minimum attainable score using equation (3) is 161.3 and the maximum 740.9. Conversion to a 10-point scale of incongruity yields:

$$BII_{SSC} = \frac{281 + 20.3[31] + 15.3[15] + 13.8[20] - 14.8[33] \\ - 12.8[48] - 10.4[29] - 9.2[45]}{58} \quad (4)$$

Maximum congruence between ideal and actual self-image is represented by a score of zero, and the larger the score becomes, the more unfavorable is the steel service center's self-image.

Factor analysis of the seven variables yielded two factors with characteristic roots greater than 1.0. The rotated factor matrix appears in Table 9. Factor one identifies positive aspects in the image, while factor two isolates negative elements. Thus the steel service center Index of Incongruity may be represented by 7 variables which appear to indicate a bidimensional concept of congruity.

REDUCED VARIABLES REPRESENTING BASIC MILL IMAGE

A linear multiple regression fitted to the 44 basic mill "actual" variables yielded an F-value of the regression against error of 1.8419. This is greater than the critical value of 1.66 with 44 and 44 degrees of freedom at the 5% level of significance.⁶

⁶Pearson and Hartley, op. cit., p. 159.

TABLE 9
 ROTATED FACTOR MATRIX OF 7 SSC VARIABLES

Question Number and Phrasing	Factor one	Factor two
15. Is poorly managed	-.56286	.25992
20. Carries a narrow range of product lines	.01484	.42691
29. Communicates details of credit policies to customer	.48307	-.18517
31. Delivery is too slow	-.31195	.76239
33. Consistently meets delivery promises	.20544	-.81696
45. Inside salesmen telephone frequently	.78290	.04987
48. Inside and outside salesmen are coordinated as a team	.80293	-.11591

Thus the regression is representative of the data. It appears in Appendix J5.

Using Rao's technique again, seven variables were extracted by examination, and a new linear multiple regression was fitted. The F-value comparing the new and original regressions was calculated to be 0.714, well below the critical F-value at the 1% level of significance. This signifies that the regression based on seven mill variables represents the data just as well as that based on the 44 variables. The reduced regression is shown in Appendix J6.

None of the seven variables in the reduced regression representing the mill image of the steel service centers corresponds to variables in the steel service center reduced regression. One variable, product quality consistency, appears in both mill and customer regressions. The remaining variables in the mill regression include independence of steel service center policies, the relation of quality to customer needs, reasonableness of delivery speed, price levels, helpfulness of advertising, and product knowledge of outside salesmen.

The "Basic Incongruity Index" for the basic mills (where question numbers of "actual" variables on the research instrument appear within the square brackets) takes the form:

$$\begin{aligned} BII_m = & 77.5 + 22.1[51] + 19.6[22] + 17.4[34] + 17.3[32] \\ & + 10.1[43] + 8.5[17] - 18.3[23] \end{aligned} \quad (5)$$

The maximum congruity score is 44.4, whereas the maximum incongruity score is 724.2. Converting equation (5) to provide a 0 - 10 scale yields the equation:

$$\begin{aligned} BII_m = & \frac{33.1 + 22.1[51] + 19.6[22] + 17.4[34] + 17.3[32]}{68} \\ & + \frac{10.1[43] + 8.5[17] - 18.3[23]}{68} \end{aligned} \quad (6)$$

Again, greatest congruity between actual and ideal images is represented by a zero score, with increasingly larger values indicating greater incongruity.

Factor analysis of the seven variables in the mill regression isolates three factors with characteristic roots greater than 1.0 (Table 10). Factor one centers on product quality and delivery in their negative aspects. Factor two deals with the negative aspects of communication: unhelpful advertising and outside salesmen weak in product knowledge. Factor three also identifies what mills see as unfavorable elements: steel service centers pursuing independent policies and having low prices. It may be concluded that the basic mills' Index of Incongruity may be represented in reduced form by 7 variables which all center on negative aspects in the eyes of the mills, and which form a tridimensional view of image congruity.

RELATIVE COMPLEXITY OF IMAGE FAVORABILITY

It is interesting that factor analysis of variables in the "Basic Incongruity Indices" yielded simplest structure for customers, bidimensional structure for steel service centers, and tridimensional structure for basic mills. This may suggest

TABLE 10
ROTATED FACTOR MATRIX OF MILL VARIABLES

Question Number and Phrasing	Factor one	Factor two	Factor three
17. Policies are in- dependent of basic mills' policies	.04999	-.00038	.88834
22. Quality consis- tency is variable	.63734	.33225	.13059
23. Quality exceeds customers' needs	.64788	-.21609	.04507
32. Delivery is un- reasonably long	.77627	.14843	.05569
34. Prices are usually low	.42154	.12326	.49072
43. Advertising is of little help to customer	-.11486	.67994	.40540
51. Outside salesmen are weak in pro- duct knowledge	.21122	.81978	-.13202

that customer perceptions and formulation of images are relatively uncomplicated--their suppliers are simply seen as favorable or unfavorable. Alternatively, steel service centers weigh their self-image in a more complex way. Basic mills seem to exhibit the greatest degree of sophistication in their evaluation of steel service centers. This may be the result of greater concern over the efficient operation of the entire channel of distribution.

The basic mills, having the greatest concern about coordinated channel efforts, must base their evaluations of steel service centers in relation to total channel effectiveness. The steel service centers, having a somewhat more immediate view of channel operations, and less control of the channel, might evaluate themselves in fewer dimensions. The customers, perhaps having less concern over channel matters, might simply view their suppliers as alternative sources of supply. If so, they would have the most basic, immediate and self-centered view of steel service center image favorability.

SUMMARY

In this chapter, a reduced number of variables have been identified which can be used to approximate the images generated by steel service centers. In place of a questionnaire incorporating 96 questions to identify relative favorability of image, steel service centers may use a research instrument containing only 6 questions to gauge the favorability of their image in the customers' eyes, 7 questions to evaluate their self-image, and 7 questions to measure how they rate in the eyes of basic mills.

The 6 or 7 questions used were found by regression analysis to best approximate evaluations which consisted of comparing weighted disparities from an ideal image on 44 variables against an ideal standard, rescaling the same 44 variables against an actual perception, and assigning weights representing relative importance to 8 subsets of the 44 differences between ideal and actual.

Thus, instead of asking respondents to evaluate 96 semantic differential scales, an approximation of the result may now be attained more easily, rapidly and inexpensively with only 6 or 7 semantic differential scales. The scale values may then be inserted in formulae (2), (4), or (6) for customers, steel service centers, or mills respectively. The resulting position on a score ranging from 0 - 10 provides a weighted measure of actual image congruence to the ideal image. The closer that score is to zero, the more favorable the steel service center's image in the respondents' collective opinion.

CHAPTER SIX

SUMMARY OF FINDINGS AND CONCLUSIONS

The concept of image has been the object of study by philosophers, psychologists, economists, government officials and businessmen. The general objective of this study was to determine what kind of image is projected by United States steel service centers. Specific objectives of the research were:

- 1) To ascertain the similarity between the image steel service centers think they project, and the image perceived by customers and basic mills.
- 2) To determine if key elements comprising an image were more representative of the image spectrum ranging from unfavorable to favorable than others.
- 3) To isolate the areas of greatest opportunity for image improvement by steel service centers.
- 4) To find whether there is a relationship between the image projected by steel

service centers and the profits they earn.

- 5) To develop a simplified instrument for image measurement by steel service centers.

Three general theories of image--those of Piaget, Mead and Osgood--provided the basic framework for image analysis in this research. These three theories were supplemented by numerous fragmentary studies and assertions from the literature of marketing. The literature suggests that imagery is useful in providing a basis for developing strategies and policies for the firm, predisposing potential customers to buy, influencing initial purchases, increasing sales volume, and increasing profits.

An image has many properties. Among the major properties are:

- 1) It represents a real object.
- 2) It is a simplified representation or abstraction of that object.
- 3) It is shaped and molded by values of the person who holds it.

- 4) It may be an accurate portrayal of the object, or totally distorted.
- 5) Once established, it is difficult to change.

An image, therefore, is defined in this study as a composite of many evaluative elements, generated by all associations with the firm and abstracted into an independent final stable impression whose meaning is mediated by the individual's values and biases.

Since steel service centers are in the pivotal distributive position between basic steel manufacturers and industrial purchasers of steel, their image was examined at all three levels of the channel of distribution: The image of steel service centers held by basic mills, the self-image of steel service centers, and the image of steel service centers held by customers.

A large number of variables judged to be the most significant dimensions of image were selected and incorporated as polar extremes on seven-interval semantic differential scales. The instrument was

tested with 47 steel service center respondents, 12 of whom were subsequently interviewed in depth to determine which scales were meaningful, clear and relevant.

To ascertain relative favorability of a steel service center's image:

- 1) a standard of measurement was established by determining the parameters of an "ideal" steel service center;
- 2) corresponding measurements were made of the "actual" steel service center, and
- 3) comparison of these measurements indicated how close to or far from "ideal" a particular center was.

The revised instrument contained the following: 44 scales of image elements to evaluate the ideal steel service center, an identical set of 44 scales to evaluate the actual steel service center, 8 scales to evaluate the relative importance of subsets of the 44 image elements, and classification data.

The research instrument was mailed to 731 customers; to six management people per mill in 21 basic mills; and to 6 management people per center in 391 steel service centers. Usable returns were received from 91 mill respondents, 459 steel service center respondents and 402 customers.

Mean scores on the semantic differential scales were compared at all three channel levels, using a paired test for significant difference between ideal and actual positions. Because the measurement properties qualifying the use of this parametric test are not totally isomorphic to the measurement properties of the ordinal semantic differential scale, extremely rigorous standards were employed in the test of significant differences. A null hypothesis was accepted only where no significant difference could be proved statistically at the .05 level. The inference that a significant difference could be accepted was only drawn at the .0001 level. No conclusions were drawn where statistically significant differences would usually be inferred at the .05, .01, or .001 levels.

It was felt that such rigor would reduce the likelihood of drawing erroneous conclusions.

SUMMARY OF RESULTS

The results of the study indicated that:

- 1) There were a few similarities among image elements of the three groups of respondents;
- 2) There were many differences between ideal and actual perceptions;
- 3) A small number of key elements in the composite were found to be more representative of the favorable-unfavorable image spectrum than the other elements;
- 4) It was possible to identify areas of greatest opportunity for improving steel service centers' image;
- 5) No relationship between image projected and profitability could be ascertained; and
- 6) An operational instrument for image measurement by steel service centers could be developed.

THE FINDINGS

Basic mills, with the largest number of congruent pairs of image elements, are most satisfied with the image projected by steel service centers. Steel service centers appear least satisfied with their self-image. This may be interpreted as a healthy sign. Steel service centers have the greatest number of significant differences between image element pairs, feel they have a long way to go to meet their ideal, and have set more stringent standards for themselves than either mills or customers.

Achievement of the ideal is acknowledged in only one image element by all three channel members--inside salesmen have struck the ideal balance between sociability and professionalism.

Both mills and steel service centers are in agreement that price levels and price stability are at the ideal level. Customers, however, disagree.

Customers and steel service centers agree that the ideal balance has been achieved on the proportion of domestic to imported metals carried and on the steel service centers' degree of

independence from basic mill policies. Mills, however, disagree on both counts.

Customers and basic mills agree that steel service centers have achieved the ideal size and credit availability. The steel service centers' views in these areas were indeterminant.

Where basic mills saw steel service centers as attaining the ideal in the number of States they cover, in the range of quality choice offered, in the range of metals and non-metals in inventory, and in permitting customers to reduce inventory, both steel service centers and customers disagreed. Mills also saw steel service centers as offering the ideal standard of quality with respect to customer needs, whereas both steel service center and customer views on this matter were judged indeterminant.

Steel service centers stood alone in evaluating themselves as achieving the ideal balance between acting on behalf of customers versus on the mills' behalf. Mills disagreed, while customers' opinions were indeterminant. Customer mean values, however,

were closer to steel service center means than were the mill mean values.

Customers were alone in their view of the steel service centers' achieving the ideal level of profitability, frequency of outside sales calls, and balance of outside salesmen's sociability to professionalism.

All three channel levels agreed that steel service centers have yet to reach ideal. At the .0001 level of significance, the following areas were identified as requiring improvement:

- 1) Steel service center management and planning.
- 2) Product quality variability.
- 3) Inventory variety and out-of-stock position.
- 4) Communication of credit policies to customers.
- 5) Delivery speed and meeting delivery promises.
- 6) Provision of product-service and specific problem-oriented information in advertisements.

- 7) Salesmen's teamwork; product knowledge; provision of technical information, advice and customer needs analysis; and follow-up on customer requests.

Weights showing relative importance of the various sets of image elements suggest that both basic mills and steel service centers scale management, inventory and salesman elements as most important. Customers see inventory, product and delivery as most significant. All three channel members view advertising as least important.

FACTOR ANALYSIS RESULTS

Factor analysis of the image variables reveals differences in the way image elements are grouped conceptually by the three types of channel members. The results suggest that mills tend to view service centers in terms of their relationship to the total channel of distribution for steel. Mills seem to have a longer range, strategic management perspective. They appear to be concerned with channel cohesion,

and the fulfillment of the customers' total needs. It may be inferred that basic steel mills have adopted the marketing philosophy in their conception of channel relationships.

Steel service centers' associations suggest they have an extremely strong sales orientation. Factors centering on personal selling are more numerous in steel service centers' conceptual framework. Sales call frequency, salesmen's attitudes, salesmen's product knowledge, and salesmen's interrelations are more apparent in the steel service centers' factor structure. Provision of information to customers appears to be more of a sales "push." There seems to be little of the long range view incorporating cohesion in the total channel effort. The associations of customer image elements also appear to indicate little concern for channel cohesion. The approach these factors suggest is more tactical than strategic.

Greatest customer concerns appear to revolve around delivery factors. The customer-assisting role of advertising seems to assume more conceptual

importance than customers might be verbally willing to admit or perhaps are even conscious of. More of the customer factors appear to be oriented toward the customers' immediate day-to-day interests. Their perspective might be interpreted as an immediate self-centered view of the channel and what it can do for them.

Factor analysis indicates differential levels of strength or importance for certain elements at each level of the distribution channel. Steel service center size appears to be more important to mill executives, moderately important for steel service centers, and is of least relative significance to customers. The elements which suggest channel cohesion are grouped together in the view of basic mills, but have little common association in the eyes of steel service centers or customers.

Salesmen's efforts appear to be strongest among the concerns of the steel service centers, of moderate concern to customers, and of least importance to the mills. Steel service center factors suggest that high sales call frequency is the strongest association in the salesman's role, whereas customers

find more of the personable or social relationship in his role, and mills view it more in terms of direct or straight-forward businesslike relationships with customers.

The desire for stable, high, orderly prices appears strongest in the view of mills, relatively less prominent in steel service center associations, and low in the customers' thoughts.

Advertising ranks high among customer image factors, less important to steel service centers, and relatively ranks lowest in mill priorities.

In the basic mills' view, good management is associated with serving total customer needs. To steel service centers, it is linked to providing customers with many forms of information. Customers tie good management to inventory and delivery policies and procedures.

Mills associate planning with profitability. Planning, however, is not linked strongly with any other factor elements by steel service centers. Customers see planning as vital in product-mix considerations.

AN OPERATIONAL TOOL FOR MEASURING IMAGE

A more operational tool than the original instrument for steel service center use in measuring image can be developed with the data from this study. Values representing how far the steel service center is perceived to be from where the respondent would like it to be can be obtained by subtracting "actual" responses from the standard established by the "ideal" responses on matching pairs of semantic differential scales. Then a relative measure of the steel service center's distance from the ideal image the respondent thinks it should have can be derived by weighting these values by their importance as indicated by the respondents. Those image elements which best represent the continuum between a good and a bad image may be isolated using regression analysis. Thus, with a few semantic differential scales (6 or 7), one can approximate fairly well the information obtained with the 96 semantic differential scales used in this study.

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By using the reduced number of variables, steel service centers can obtain a measure of their image relative to that of the mix of steel service centers who participated in this study. This "Basic Incongruity Index," represents a nationwide sample of centers, large and small, general line and specialist. Hence, the value of the reduced set of variables presented here is more in suggesting a technique which an individual steel service center might use to arrive at an operational instrument applicable to the steel service center's own unique market situation.

Factor analysis of the image elements used in the final "Basic Incongruity Index" revealed that even in this reduced form, the index represents differing conceptual dimensions of image at each level of the channel of distribution. Basic mills exhibit a tridimensional factor structure, which suggests a more complex, multi-faceted concept of steel service center image. Steel service centers evaluate their own image bidimensionally: one factor taking into account positive image elements,

the second factor consisting of negative image elements. Customers exhibit the simplest conception of steel service center image. A single factor appears to represent their overall evaluation of all elements in the simplified incongruity index.

IMPLICATIONS

Viewing steel service centers as a central link in the channel of distribution, the research results indicate that certain steps should be undertaken to improve steel service center images in the eyes of both customers and basic mills. These recommendations are based upon findings from the aggregate of steel service centers who participated in the study. Their application to any individual steel service center, however, should be made only after investigation indicates that center's particular situation warrants the recommended action.

SHORT RUN RECOMMENDATIONS

- A) Quality Control. The findings indicate that variability in quality harms a steel service center's image. Although basic mills provide

materials which meet tight metallurgical standards, other aspects of quality can be favorably or adversely affected by the steel service center. Three areas which offer opportunities for improved quality control are:

- 1) Material Condition. Greater care is recommended in storage, palletizing methods, wrapping or packaging, shipping and handling to protect material condition.
- 2) Order Makeup. Careful scrutiny of shipments is recommended to insure that customers' orders are correctly filled.
- 3) Pre-production Processing. Customers' demands for closer tolerances in first step processing are increasing rapidly. Many steel service centers have acquired more sophisticated equipment to meet increasing customer demands. Steel service centers which do not improve their first step processing quality may lose customers whose requirements are stringent.

B) Inventory Management. The research findings suggest that a wider variety of sizes, grades, shapes and qualities of metal can improve steel service center images. Tied in with breadth and depth of inventory is out-of-stock frequency. Large steel service centers are best equipped to carry a wide general line. For smaller steel service centers specialization may be an appropriate approach to resolving the inventory problem: providing complete variety in a narrow product line.

Specialization is being practised currently by some centers in the alloy business, in structural steel, in flat rolled carbon steel, stainless, tool steel, and tubing. This can provide better service, even though it requires several orders to different suppliers to obtain all the steel required. It is recommended that small steel service centers study their customers' product needs to establish criteria for reducing the proliferation of materials they carry.

- C) Delivery Scheduling. Steel service centers are judged by all channel members to be weak in consistently meeting delivery promises. Since most steel service centers provide twenty-four hour delivery on standard items, delivery speed is not the only factor. Rather, the weakness must be viewed in terms of customers' total delivery needs. Most customers state that delivery before the time they need supplies is almost as bad as delivery that is later than their requirement. Consequently, the question of delivery "speed" is relative to a stated deadline requirement and a companion delivery promise.

The Steel Service Center Institute is currently studying the use of linear programming techniques in assigning orders to specific trucks, specifying truck routes, and meeting specific delivery times. Continued study of distribution methods, and application of computer techniques to physical distribution problems will assist steel service centers in increasing their levels of customer service.

Another problem is poor communications with the customer when delivery promises cannot be fulfilled. To reduce delivery dissatisfaction, it is recommended that steel service centers not only provide customers with reasonable estimates of delivery times and insure that these promises are consistently realized; but most importantly, where short shipments cannot be avoided, notify the customer and explain the problem. Steel service centers have paid too little attention to this area of customer communication, probably because of the high volume of small orders they handle.

LONG RUN RECOMMENDATIONS

- D) Management and Planning. The research results indicate a need for improving general management skills and planning. Educational programs offered by the Steel Service Center Institute have contributed substantially to improving managerial skills in the industry. Nevertheless, there is still room for improvement.

The steel service center industry increasingly is experiencing the need for people with higher educational qualifications. The want is extremely pressing in the plant operation, but is true at all managerial levels. However, the greatest urgency for managerial upgrading is in the smaller single plant steel service centers, which typically are family-owned and generate less than six million dollars in annual sales. Small, undercapitalized steel service centers experiencing cash flow difficulties are most in need of managerial training, but have least time or inclination for such efforts.

Improvement in managerial skills and planning may be acquired in a number of ways, including attending conferences, workshops, professional association seminars, evening educational programs at colleges and universities; exchanging ideas with peers; and reading appropriate literature. Steel service centers can foster such developments.

As with other industries, more critical to long run development of skilled managers are steel service center hiring practices. Experienced managers may be hired from other organizations; or business graduates with a B.A. or M.B.A. may be recruited with the objective of fostering their progress through the organization into managerial ranks.

- E) Sales Management. Both inside and outside salesmen should be stronger in the area of product knowledge. This suggests a need to develop product clinics, preferably conducted by basic mill metallurgists and product application specialists. Training programs should not be one-time events, but rather continue from year to year. In addition, tests of product competence might be employed to evaluate and motivate participants.

There is also a need for sales training in techniques of analyzing customers' problems and specifying problem-solving materials and technical information. Accurate definition of the customers'

needs is the precondition for effective application of product knowledge. Technological advances and automation are making customers' problems more complicated, and customers' need for specialized assistance more pressing. Their demand is increasing for more specialized salesmen, more technical assistance from mills, and more helpful advertising. The research results also disclose weakness in following up customer requests and in inside-outside sales coordination. These two needs could be met by developing greater liaison between inside and outside salesmen in steel service centers, possibly by pairing specific inside and outside salesmen as teams.¹

However, further research is recommended to determine the best method of achieving this goal.

¹See also, Boewadt, Robert James, "An Analysis of the Internal Sales Force as a Factor in the Design of Total Sales Strategy," (unpublished Ph.D. Dissertation, Michigan State University, 1970).

A FURTHER RECOMMENDATION

- F) Advertising. Although not as important as the preceding recommendations, all channel levels agree that more product-service technical data and specific problem-oriented information should be provided in the individual steel service center's advertising. Furthermore, factor analysis indicates that, although not overtly articulated, advertising plays an important role in the conceptual makeup of customers' impressions of individual steel service centers: a role that is second only to delivery considerations.

LIMITATIONS OF THE STUDY

Because of the very nature of behavioral research, images cannot be measured precisely. 'Ordinal data do not lend themselves to formal parametric statistical models. However, violations of the assumptions implied by using inferential statistics usually have very little effect on the indices or on inferential

statistics applied to the indices.²

Use of a mail questionnaire leads to such problems as: 1) respondents misinterpreting questions; 2) the researcher misinterpreting responses; 3) limitation on the range of response; 4) respondents revising their responses for what they think is greater consistency; 5) unanswered scales; and 6) non-response bias. The first two problems were partially avoided by pretesting the research instrument and personally interviewing pretest respondents. Encouragement of write-in comments expanded response ranges. Instructions directing respondents not to go back and revise answers were included to try to avoid the fourth problem. And the high response rates suggest that non-response bias was not great.

Factor analysis is the object of much criticism by statisticians. Nevertheless, it has gained widespread acceptance among psychologists, sociologists, geologists, and biometricians. It is

²Nunnally, Jum C., Psychometric Theory. New York: McGraw-Hill Book Company, 1967, pp. 24-26.

considered an important method in determining internal structures and cross-structures for sets of variables, and in suggesting predictors that will work well in practice.³ Similarly, multiple regression techniques have received widespread use by econometricians and other behavioral scientists and provide useful results.

In the comparison of ideal and actual profiles, an attempt to reduce the chance of erroneous interpretation was made by drawing conclusions about differences only at the .0001 level of significance, and by inferring no difference only when a statistical difference could not be proved at the .05 level of significance.

Limitations in drawing the sample could not be avoided. The sample of basic mills was a judgment sample developed by the Steel Service Center Institute. Inclusion of the ten largest mills in the United States, however, does assure that the sample represents the largest proportion of tonnage purchased by steel service centers, and consequently the most important suppliers. Furthermore, the

³Ibid., p. 101.

eleven specialized mills may be considered representative of this segment of suppliers of basic steel.

Steel service centers were selected by systematic random sampling using one-third of the Steel Service Center Institute membership roster. Complete response consisted of a set of six questionnaires per center. The study was limited because only 15 steel service centers returned a complete set of six questionnaires.

The study was further limited by the fact that, although 244 steel service centers responded, only 75 also returned a representative list of customers. There was no way of insuring that the customer list was representative of the steel service center's customer mix.

Furthermore, in relating an index of incongruity derived from customers' perceptions of their supplier to that steel service center, it must be remembered that the average number of customers responding per center was 5.5. Consequently, there was some variance of image incongruency per center.

In the light of these limitations, and considering the breadth of this study, it should be emphasized that the conclusions reached are considered tentative. They should be interpreted as indicating only the general situation which prevails throughout the channel of distribution for steel. They are an attempt to obtain industry-wide insights. They do not represent, nor should they be unreservedly applied to, any individual steel service center. They furnish a basis for further investigation and research.

SUGGESTIONS FOR FURTHER RESEARCH

It is hoped that this research study will stimulate further investigation of imagery, particularly among industrial markets, where relatively little motivation and other psychological research currently is being done. A logical extension would be an intensive examination of imagery focusing upon one steel service center and a large random sample of its customers. Such a study could indicate just how applicable the general information contained

herein may be. It could also provide immediately applicable information for the management of the steel service center cooperating in such an intensive study.

A second avenue for further study would be a replication of this study at a suitable time interval, say 3 to 5 years hence. This would furnish a broad assessment of changes in channel imagery.

Additional research is also suggested to determine more accurately whether there is a relationship between image favorability and profitability. It is apparent that major limitations hindering the proof of such relationships in this study were the small number of customers responding per center and the range of other variables impinging on profitability. The first limitation could be overcome with the commitment of a relatively small number of steel service centers, say 25, to provide complete cooperation, including access to their total customer roster. The extension of the study over a period of several years could cancel differences in variables other than image elements. Such research could measure

image-profit changes over time, and provide valuable information concerning the relationship.

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APPENDICES

APPENDIX A
COVERING LETTERS

- A1 Initial Mill Letter
- A2 Follow-up Mill Letter
- A3 Initial Steel Service Center Letter
- A4 Follow-up Steel Service Center Letter
- A5 Initial Customer Letter With Referral
- A6 Initial Customer Letter Without Referral
- A7 Follow-up Customer Letter
- A8 Robert Welch's Follow-Up Letter

APPENDIX A1
INITIAL MILL LETTER

MICHIGAN STATE UNIVERSITY EAST LANSING • MICHIGAN 48823

GRADUATE SCHOOL OF BUSINESS ADMINISTRATION
DEPARTMENT OF MARKETING AND TRANSPORTATION ADMINISTRATION • EPPLEY CENTER

As you are aware, Michigan State University and the Steel Service Center Institute cooperate in conducting continuous research into all aspects of steel distribution. A current project is the study of steel service center image. It is hoped that this project will yield results that will help steel service centers increase their level of service to both mill and customers.

We are therefore requesting your help in this research study. Enclosed are six questionnaires. Would you be kind enough to answer one yourself, and to ask five of your outside men to do the same? The men you select should be the field men who have the most personal contact with steel service centers, and who are most seasoned in dealing with centers. We would appreciate you and your field men answering the questionnaire independently and without consultation. Stamped, self-addressed envelopes are enclosed for convenience in responding.

I should point out that the information provided by you and by your field men will be held in strictest confidence. The data will be grouped along with responses from other mills across the United States under several categories, such as integrated or specialized mills, mill size, etc., and no individual or firm will be identified.

As you know, the success of any research of this type is largely dependent upon the complete cooperation of the people who are chosen to represent their industry. I hope that you will join with us in the spirit of scientific research which has led to many advances in the business of steel distribution.

Yours sincerely,

PMB:dc
Encl.

Peter M. Banting
Research Director

APPENDIX A2
FOLLOW-UP MILL LETTER

MICHIGAN STATE UNIVERSITY EAST LANSING • MICHIGAN 48823

GRADUATE SCHOOL OF BUSINESS ADMINISTRATION
DEPARTMENT OF MARKETING AND TRANSPORTATION ADMINISTRATION • EPPLEY CENTER

Several weeks ago I wrote to you requesting your help in a research study of the image of steel service centers. I am conducting this research for my doctoral dissertation at Michigan State University, and am teaching at McMaster University in Hamilton, Canada. Thus, the results of my research are solely for a thesis report about the steel industry, and no specific company will be identified. Since it is too costly to survey every member of the industry, the accuracy of this study depends entirely upon the response of mill executives, like yourself, who were chosen by a statistical random sampling method to represent your industry. Therefore, I am writing again to ask for a few minutes of your time to help me obtain meaningful information.

If, by chance, the earlier package did not reach you or was mislaid, I have included a duplicate set. It contains 6 questionnaires. Would you be kind enough to answer one yourself, and to ask five of your outside men to do the same? The men you select should be the field men who have the most personal contact with steel service centers, and who are most seasoned in dealing with centers. We would appreciate you and your field men answering the questionnaire independently and without consultation. Stamped, self-addressed envelopes are enclosed for convenience in responding.

The information provided by you and by your field men will be held in strictest confidence. The data will be grouped along with responses from other mills across the United States under several categories, such as integrated or specialized mills, mill size, etc., and no individual or firm will be identified.

The results of this research will be made available by the Steel Service Center Institute. I know that you will be interested in these results and, like other steel mill executives who have already responded, will want the conclusions based on accurate information. Thus, if you are too busy at the moment, perhaps you could spend a few minutes at home to respond. Again let me emphasize that all information you provide will be treated in utmost confidence.

Thank you for your assistance,

Peter M. Banting

PMB:kw

Encl.

APPENDIX A3
INITIAL STEEL SERVICE CENTER LETTER

MICHIGAN STATE UNIVERSITY EAST LANSING - MICHIGAN 48821

GRADUATE SCHOOL OF BUSINESS ADMINISTRATION
DEPARTMENT OF MARKETING AND TRANSPORTATION ADMINISTRATION - EPPLEY CENTER

As a member of the Steel Service Center Institute, you are familiar with the continuous research conducted by Michigan State University into all aspects of steel distribution. A current project recently approved by the SSCI is the study of steel service center image. It is hoped that this project will yield results that will assist steel service centers in increasing their profitability.

We are therefore requesting your help in two ways:

1. Enclosed are 6 questionnaires. Would you be kind enough to take approximately 15 minutes to answer one yourself, and to ask five members of your executive group to do the same?
2. Would you provide the writer with a list of names and addresses of 10 of your customers, whom you feel are representative of your customer mix, and who would be likely to cooperate in answering a similar questionnaire?

I should point out that the information provided by you and your customers will be held in strictest confidence. The data will be grouped along with responses from other steel service centers across the United States and Canada under several categories, such as company size and geographic region, and no individual or firm will be identified in the research report. Stamped, self-addressed envelopes are enclosed for convenience in responding. We would appreciate you and your executive group answering the questionnaire independently and without consultation.

A separate form is enclosed upon which you may list the customers you select. Please attempt to choose 10 customers who represent your total customer group. That is, they should not be all big, or all small customers; all best or worst. Rather they should be a representative cross-section, using whatever criteria you feel would provide a reasonable composite picture of your total customer mix.

As you know, the success of any research of this type is largely dependent upon the complete cooperation of the people who are chosen to represent their industry. I hope that you will join with us in the spirit of scientific research which has led to many advances in the business of steel distribution.

Yours sincerely,

PMB:dc
Encl.

Peter M. Banting
Research Director

APPENDIX A4

FOLLOW-UP STEEL SERVICE CENTER LETTER

MICHIGAN STATE UNIVERSITY EAST LANSING • MICHIGAN 48825

GRADUATE SCHOOL OF BUSINESS ADMINISTRATION

DEPARTMENT OF MARKETING AND TRANSPORTATION ADMINISTRATION • EPPLEY CENTER

Several weeks ago I wrote to you requesting your help in a research study of the image of steel service centers. I am conducting this research for my doctoral dissertation at Michigan State University, and am teaching at McMaster University in Hamilton, Canada. Thus, the results of my research are solely for a thesis report about the steel industry, and no specific company will be identified. Since it is too costly to survey every member of the industry, the accuracy of this study depends entirely upon the response of people, like yourself, who were chosen by a statistical random sampling method to represent your industry. Therefore, I am writing again to ask for a few minutes of your time to help me obtain meaningful information.

If, by chance, the earlier package did not reach you or was mislaid, I have included a duplicate set. It contains 6 questionnaires. Would you be kind enough to answer one yourself, and to ask five members of your executive group to do the same? The information you provide will be held in strictest confidence. The data will be grouped along with responses from other steel service centers across the United States and Canada under several categories, such as company size and geographic region, and no individual or firm will be identified in the research report. Stamped, self-addressed envelopes are enclosed for convenience in responding. You and your executive group should answer the questionnaire independently and without consultation.

Secondly, would you provide me with a list of names and addresses of 10 of your customers, whom you feel are representative of your customer mix, and who would be likely to cooperate in answering a similar questionnaire? A separate yellow form is enclosed upon which you may list the customers you select. Please attempt to choose 10 customers who represent your total customer group. That is, they should not be all big, or all small customers; all best or worst. Rather they should be a representative cross-section, using whatever criteria you feel would provide a reasonable composite picture of your total customer mix.

The results of this research will be made available by the Steel Service Center Institute. I know that you will be interested in these results and, like other steel service centers who have already responded, will want the conclusions based on accurate information. Thus, if you are too busy at the moment, perhaps you could spend a few minutes at home to respond. Again let me emphasize that all information you provide will be treated in utmost confidence.

Thank you for your assistance,

PMB/jc
Encl.

Peter M. Banting

APPENDIX A5

INITIAL CUSTOMER LETTER WITH REFERRAL

MICHIGAN STATE UNIVERSITY EAST LANSING • MICHIGAN 48823

GRADUATE SCHOOL OF BUSINESS ADMINISTRATION

DEPARTMENT OF MARKETING AND TRANSPORTATION ADMINISTRATION • EPPLEY CENTER

As a buyer of steel, you are no doubt interested in anything which may improve the service you receive from your steel service center. For several years, Michigan State University in cooperation with the Steel Service Center Institute has conducted continuing research into all aspects of steel distribution. A current project is the study of steel service center image. It is hoped that this project will yield results that will help steel service centers increase their level of service to customers, and possibly reduce the cost of such service.

We are therefore requesting your help in this research study. Your name was suggested to us by _____ as one of the firm's valued customers.

Would you be kind enough to take approximately 15 minutes to answer the enclosed questionnaire? Or, if you are not the person responsible for making the majority of purchases from this firm, would you have whoever deals with the firm do so?

I should point out that the information provided by you will be held in strictest confidence. The data will be grouped along with responses from other customers across the United States under several categories, such as company size, type of steel purchased, etc., and no individual or firm will be identified. A stamped, self-addressed envelope is enclosed for your convenience in responding.

As you know, the success of any research of this type is largely dependent upon the complete cooperation of the people who are chosen to represent their industry. I hope that you will join with us in the spirit of scientific research which has led to many improvements in the service provided by steel distributors over the years.

Yours sincerely,

PMB:dc
Encl.

Peter M. Banting
Research Director

APPENDIX A6

INITIAL CUSTOMER LETTER WITHOUT REFERRAL

MICHIGAN STATE UNIVERSITY EAST LANSING • MICHIGAN 48823

GRADUATE SCHOOL OF BUSINESS ADMINISTRATION

DEPARTMENT OF MARKETING AND TRANSPORTATION ADMINISTRATION • EPPLEY CENTER

As a buyer of steel, you are no doubt interested in anything which may improve the service you receive from your steel service center. For several years, Michigan State University in cooperation with the Steel Service Center Institute has conducted continuing research into all aspects of steel distribution. A current project is the study of steel service center image. It is hoped that this project will yield results that will help steel service centers increase their level of service to customers, and possibly reduce the cost of such service.

We are therefore requesting your help in this research study. Would you be kind enough to take approximately 15 minutes to answer the enclosed questionnaire? Or, if you are not the person responsible for making the majority of purchases from steel service centers would you have the person who deals with these firms do so?

I should point out that the information provided by you will be held in strictest confidence. The data will be grouped along with responses from other customers across the United States under several categories, such as company size, type of steel purchased, etc., and no individual or firm will be identified. A stamped, self-addressed envelope is enclosed for your convenience in responding.

As you know, the success of any research of this type is largely dependent upon the complete cooperation of the people who are chosen to represent their industry. I hope that you will join with us in the spirit of scientific research which has led to many improvements in the service provided by steel distributors over the year.

Yours sincerely,

PMB:jls
Encl.

Peter M. Banting,
Research Director.

APPENDIX A7
FOLLOW-UP CUSTOMER LETTER

MICHIGAN STATE UNIVERSITY EAST LANSING • MICHIGAN 48824

GRADUATE SCHOOL OF BUSINESS ADMINISTRATION
DEPARTMENT OF MARKETING AND TRANSPORTATION ADMINISTRATION • EPPLEY CENTER

Several weeks ago I wrote to you requesting your help in a research study of the image of steel service centers. I am conducting this research for my doctoral dissertation at Michigan State University, and am teaching at McMaster University in Hamilton, Canada. Thus, the results of my research are solely for a thesis report about the steel industry, and no specific company will be identified. Since it is too costly to survey each member of the industry, the accuracy of this study depends entirely upon the response of people, like yourself, who were chosen by a statistical random sampling method to represent your industry. Therefore, I am writing again to ask for a few minutes of your time to help me obtain meaningful information.

If, by chance, my earlier letter did not reach you or was mislaid, I have included a duplicate questionnaire. Would you be kind enough to take approximately 15 minutes to answer the enclosed questionnaire? Or, if you are not the person responsible for making the majority of purchases from steel service centers, would you have the person who deals with these firms do so?

The information provided by you will be held in strictest confidence. The data will be grouped along with responses from other steel buyers across North America under several categories, such as company size, type of steel purchased, etc., and no individual or firm will be identified. A stamped, self-addressed envelope is enclosed for your convenience in responding.

The results of this research will be made available by the Steel Service Center Institute. I know that you will be interested in these results and, like other executives purchasing steel who have already responded, will want the conclusions based on accurate information. Thus, if you are too busy at the moment, perhaps you could spend a few minutes at home to respond. Again let me emphasize that all information you provide will be treated in utmost confidence.

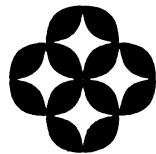
Thank you for your assistance,

PMB/jc
Encl.

Peter M. Banting

APPENDIX A8

ROBERT WELCH'S FOLLOW-UP LETTER



Steel Service Center Institute

16th Floor, Terminal Tower, Cleveland, Ohio 44113 (216) 241-3468
Robert G. Welch, President

January 22, 1970

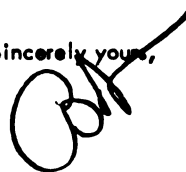
Recently you received a rather detailed questionnaire from Peter Banting who is writing a doctoral dissertation on marketing strategies of service centers. His study involves attitudes of service centers as well as customers and suppliers. There is a very strong possibility that this research could make a substantial contribution to knowledge about our industry, its relations with its customers and its suppliers, and marketing strategies.

Peter Banting is preparing this study under a fellowship grant from the Steel Service Center Institute.

The last time I checked he had not received your questionnaire. We would greatly appreciate your filling it out and forwarding it to Mr. Banting. All information will be handled on a completely confidential basis. No individual or company name will be in any way identified in this survey.

May we count on your assistance?

Sincerely yours,



rt

APPENDIX B
QUESTIONNAIRES

Green Booklet.....Mill Questionnaire

Pink Booklet.....Steel Service Center
Questionnaire

White Booklet.....Customer Questionnaire

1							
1	2	3	4	5	6	7	

DEPARTMENT OF MARKETING AND TRANSPORTATION ADMINISTRATION
GRADUATE SCHOOL OF BUSINESS ADMINISTRATION
MICHIGAN STATE UNIVERSITY

The number in the upper right hand corner of this page serves only as a guide for the research staff. Its only purpose is to tell us whether or not a particular questionnaire has been returned.

This research is designed and conducted by the university. No names of individuals or firms will be identified in the text of the research report.

The purpose of this study is to determine how your steel service centers compare to what you would like to see in the ideal or perfect steel service center. Under headings such as Management and Price you are asked to make judgments about steel service centers against a series of descriptive scales. Your first judgments concern what you would expect of an ideal steel service center. Then, in part two, using the same descriptive scales, you are asked to position the steel service centers with which you deal. Please make your judgment on the basis of what each factor means to **you**, checking the appropriate position along each scale to indicate how strongly you agree or disagree with the statement.

- NOTE: 1. Place your check mark in the middle of the spaces, not in the dotted boundaries.
2. Do not omit any scale.
3. Do not put more than one check mark on any single space.

You may at times feel you have answered the same item before. This is not the case, so do not look back and forth through the items or try to remember how you checked similar items earlier. Make each item a separate and independent judgment. Work at a fairly high speed. Do not worry or spend a great deal of time puzzling individual items. Your first impressions, your immediate feelings, are what is wanted. However, do not be careless either, because your true impressions are desired.

PART ONE

Please indicate the position on each of the following scales which represents your view

of

THE IDEAL STEEL SERVICE CENTER

Note: The higher the number, the more you agree.

	Disagree Strongly	Disagree Moderately	Disagree Slightly	Neither Agree nor Disagree	Agree Slightly	Agree Moderately	Agree Strongly
Organization:							
10. Is Large	..... : 1	..... : 2	..... : 3	..... : 4	..... : 5	..... : 6	..... : 7
11. Concentrates on imported metals	..... : 1	..... : 2	..... : 3	..... : 4	..... : 5	..... : 6	..... : 7
12. Earns large profits	..... : 1	..... : 2	..... : 3	..... : 4	..... : 5	..... : 6	..... : 7
13. Provides only limited emergency source of supply rather than serving total customer needs	..... : 1	..... : 2	..... : 3	..... : 4	..... : 5	..... : 6	..... : 7
14. Operates branches in large number of States	..... : 1	..... : 2	..... : 3	..... : 4	..... : 5	..... : 6	..... : 7
Management:							
15. Is poorly managed	..... : 1	..... : 2	..... : 3	..... : 4	..... : 5	..... : 6	..... : 7
16. Plans thoroughly for future	..... : 1	..... : 2	..... : 3	..... : 4	..... : 5	..... : 6	..... : 7
17. Policies are independent of basic mills' policies	..... : 1	..... : 2	..... : 3	..... : 4	..... : 5	..... : 6	..... : 7
18. Does not have well defined formal policies	..... : 1	..... : 2	..... : 3	..... : 4	..... : 5	..... : 6	..... : 7
19. Acts more as a purchasing agent for customers than as a sales agent for mill	..... : 1	..... : 2	..... : 3	..... : 4	..... : 5	..... : 6	..... : 7
Products:							
20. Carries a narrow range of product lines	..... : 1	..... : 2	..... : 3	..... : 4	..... : 5	..... : 6	..... : 7
21. Offers a wide range of quality choice	..... : 1	..... : 2	..... : 3	..... : 4	..... : 5	..... : 6	..... : 7
22. Quality consistency is variable	..... : 1	..... : 2	..... : 3	..... : 4	..... : 5	..... : 6	..... : 7
23. Quality exceeds customers' needs	..... : 1	..... : 2	..... : 3	..... : 4	..... : 5	..... : 6	..... : 7
24. Offers few pre-production services (slitting, heat-treating, etc.)	..... : 1	..... : 2	..... : 3	..... : 4	..... : 5	..... : 6	..... : 7
Inventory:							
25. Carries a wide variety of sizes, grades, shapes, qualities or steel	..... : 1	..... : 2	..... : 3	..... : 4	..... : 5	..... : 6	..... : 7
26. Carries broad range of metals and non-metals	..... : 1	..... : 2	..... : 3	..... : 4	..... : 5	..... : 6	..... : 7
27. Is frequently out of stock in some items	..... : 1	..... : 2	..... : 3	..... : 4	..... : 5	..... : 6	..... : 7
28. Permits customer to reduce inventory	..... : 1	..... : 2	..... : 3	..... : 4	..... : 5	..... : 6	..... : 7

Note: The higher the number, the more you agree.

	Disagree Strongly	Disagree Moderately	Disagree Slightly	Neither Agree nor Disagree	Agree Slightly	Agree Moderately	Agree Strongly
Credit and Delivery:							
1. Communicates details of credit policies to customer	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
2. Credit difficult to obtain	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
3. Delivery is too slow	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
4. Delivery is unreasonably long	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
5. Consistently meets delivery promises	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
Prices:							
6. Prices are usually low	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
7. Prices fluctuate frequently with little apparent reason	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
8. Prices are fixed, never increase for "unusual" occasions (e.g. rush job)	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
9. Frequently offers "specials"	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
10. Prices usually seem "fair"	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
Advertising:							
11. Advertises heavily	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
12. Uses direct mail advertising more than magazine advertising	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
13. Provides much product service information in advertisements	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
14. Communicates large amount of specific problem-oriented information	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
15. Advertising is of little help to customer	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
Salesmen:							
16. Outside salesmen call frequently	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
17. Inside salesmen telephone frequently	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
18. Salesmen act more as an extension of the basic mills' sales force than as service center representatives	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
19. Salesmen provide up-to-date technical information, advice and analysis of customer needs rather than simply taking orders	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
20. Inside and outside salesmen are co-ordinated as a team	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
21. Inside salesmen are more personal, friendly and sociable than business-like and professional.	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
22. Outside salesmen are more personal, friendly and sociable than business-like and professional	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
23. Outside salesmen are weak in product knowledge	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
24. Inside salesmen are weak in product knowledge.	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
25. Salesmen consistently follow-up on customer requests	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7

PART ONE

Please indicate the position on each of the following scales which represents your view

of

THE IDEAL STEEL SERVICE CENTER

Note: The higher the number, the more you agree.

Disagree Strongly	Disagree Moderately	Disagree Slightly	Neither Agree nor Disagree	Agree Slightly	Agree Moderately	Agree Strongly
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Organization:

10. Is Large : 1 : 2 : 3 : 4 : 5 : 6 : 7
11. Concentrates on imported metals : 1 : 2 : 3 : 4 : 5 : 6 : 7
12. Earns large profits	..... : 1	..... : 2	..... : 3	..... : 4	..... : 5	..... : 6	..... : 7
13. Provides only limited emergency source of supply rather than serving total customer needs	..... : 1	..... : 2	..... : 3	..... : 4	..... : 5	..... : 6	..... : 7
14. Operates branches in large number of States	..... : 1	..... : 2	..... : 3	..... : 4	..... : 5	..... : 6	..... : 7

Management:

15. Is poorly managed	..... : 1	..... : 2	..... : 3	..... : 4	..... : 5	..... : 6	..... : 7
16. Plans thoroughly for future	..... : 1	..... : 2	..... : 3	..... : 4	..... : 5	..... : 6	..... : 7
17. Policies are independent of basic mills' policies	..... : 1	..... : 2	..... : 3	..... : 4	..... : 5	..... : 6	..... : 7
18. Does not have well defined formal policies	..... : 1	..... : 2	..... : 3	..... : 4	..... : 5	..... : 6	..... : 7
19. Acts more as a purchasing agent for customers than as a sales agent for mill	..... : 1	..... : 2	..... : 3	..... : 4	..... : 5	..... : 6	..... : 7

Products:

20. Carries a narrow range of product lines	..... : 1	..... : 2	..... : 3	..... : 4	..... : 5	..... : 6	..... : 7
21. Offers a wide range of quality choice	..... : 1	..... : 2	..... : 3	..... : 4	..... : 5	..... : 6	..... : 7
22. Quality consistency is variable	..... : 1	..... : 2	..... : 3	..... : 4	..... : 5	..... : 6	..... : 7
23. Quality exceeds customers' needs	..... : 1	..... : 2	..... : 3	..... : 4	..... : 5	..... : 6	..... : 7
24. Offers few pre-production services (slitting, heat-treating, etc.)	..... : 1	..... : 2	..... : 3	..... : 4	..... : 5	..... : 6	..... : 7

Inventory:

25. Carries a wide variety of sizes, grades, shapes, qualities or steel	..... : 1	..... : 2	..... : 3	..... : 4	..... : 5	..... : 6	..... : 7
26. Carries broad range of metals and non-metals	..... : 1	..... : 2	..... : 3	..... : 4	..... : 5	..... : 6	..... : 7
27. Is frequently out of stock in some items	..... : 1	..... : 2	..... : 3	..... : 4	..... : 5	..... : 6	..... : 7
28. Permits customer to reduce inventory	..... : 1	..... : 2	..... : 3	..... : 4	..... : 5	..... : 6	..... : 7

Note: The higher the number, the more you agree.

	Disagree Strongly	Disagree Moderately	Disagree Slightly	Neither Agree nor Disagree	Agree Slightly	Agree Moderately	Agree Strongly
Credit and Delivery:							
Communicates details of credit policies to customer	1	2	3	4	5	6	7
Credit difficult to obtain	1	2	3	4	5	6	7
Delivery is too slow	1	2	3	4	5	6	7
Delivery is unreasonably long	1	2	3	4	5	6	7
Consistently meets delivery promises	1	2	3	4	5	6	7
Prices:							
1. Prices are usually low	1	2	3	4	5	6	7
5. Prices fluctuate frequently with little apparent reason	1	2	3	4	5	6	7
5. Prices are fixed, never increase for "unusual" occasions (e.g. rush job)	1	2	3	4	5	6	7
7. Frequently offers "specials"	1	2	3	4	5	6	7
8. Prices usually seem "fair"	1	2	3	4	5	6	7
Advertising:							
9. Advertises heavily	1	2	3	4	5	6	7
10. Uses direct mail advertising more than magazine advertising	1	2	3	4	5	6	7
11. Provides much product service information in advertisements	1	2	3	4	5	6	7
12. Communicates large amount of specific problem-oriented information	1	2	3	4	5	6	7
13. Advertising is of little help to customer	1	2	3	4	5	6	7
Salesmen:							
44. Outside salesmen call frequently	1	2	3	4	5	6	7
45. Inside salesmen telephone frequently	1	2	3	4	5	6	7
46. Salesmen act more as an extension of the basic mills' sales force than as service center representatives	1	2	3	4	5	6	7
47. Salesmen provide up-to-date technical information, advice and analysis of customer needs rather than simply taking orders	1	2	3	4	5	6	7
48. Inside and outside salesmen are coordinated as a team	1	2	3	4	5	6	7
49. Inside salesmen are more personal, friendly and sociable than business-like and professional.	1	2	3	4	5	6	7
50. Outside salesmen are more personal, friendly and sociable than business-like and professional	1	2	3	4	5	6	7
51. Outside salesmen are weak in product knowledge	1	2	3	4	5	6	7
52. Inside salesmen are weak in product knowledge.	1	2	3	4	5	6	7
53. Salesmen consistently follow-up on customer requests	1	2	3	4	5	6	7

PART TWO

Please indicate the position on each of the following scales which represents your view

of

YOUR ACTUAL STEEL SERVICE CENTERS

Note: The higher the number, the more you agree.

Disagree Strongly	Disagree Moderately	Disagree Slightly	Neither Agree nor Disagree	Agree Slightly	Agree Moderately	Agree Strongly
----------------------	------------------------	----------------------	----------------------------------	-------------------	---------------------	-------------------

Organization:

10. Is Large:.....:.....:.....:.....:.....:.....
	1	2	3	4	5	6
11. Concentrates on imported metals:.....:.....:.....:.....:.....:.....
	1	2	3	4	5	6
12. Earns large profits:.....:.....:.....:.....:.....:.....
	1	2	3	4	5	6
13. Provides only limited emergency source of supply rather than serving total customer needs:.....:.....:.....:.....:.....:.....
	1	2	3	4	5	6
14. Operates branches in large number of States:.....:.....:.....:.....:.....:.....
	1	2	3	4	5	6

Management:

15. Is poorly managed:.....:.....:.....:.....:.....:.....
	1	2	3	4	5	6
16. Plans thoroughly for future:.....:.....:.....:.....:.....:.....
	1	2	3	4	5	6
17. Policies are independent of basic mills' policies:.....:.....:.....:.....:.....:.....
	1	2	3	4	5	6
18. Does not have well defined formal policies:.....:.....:.....:.....:.....:.....
	1	2	3	4	5	6
19. Acts more as a purchasing agent for customers than as a sales agent for mill:.....:.....:.....:.....:.....:.....
	1	2	3	4	5	6

Products:

20. Carries a narrow range of product lines:.....:.....:.....:.....:.....:.....
	1	2	3	4	5	6
21. Offers a wide range of quality choice:.....:.....:.....:.....:.....:.....
	1	2	3	4	5	6
22. Quality consistency is variable:.....:.....:.....:.....:.....:.....
	1	2	3	4	5	6
23. Quality exceeds customers' needs:.....:.....:.....:.....:.....:.....
	1	2	3	4	5	6
24. Offers few pre-production services (slitting, heat-treating, etc.):.....:.....:.....:.....:.....:.....
	1	2	3	4	5	6

Inventory:

25. Carries a wide variety of sizes, grades, shapes, qualities or steel:.....:.....:.....:.....:.....:.....
	1	2	3	4	5	6
26. Carries broad range of metals and non-metals:.....:.....:.....:.....:.....:.....
	1	2	3	4	5	6
27. Is frequently out of stock in some items:.....:.....:.....:.....:.....:.....
	1	2	3	4	5	6
28. Permits customer to reduce inventory:.....:.....:.....:.....:.....:.....
	1	2	3	4	5	6

Note: The higher the number, the more you agree.

	Disagree Strongly	Disagree Moderately	Disagree Slightly	Neither Agree nor Disagree	Agree Slightly	Agree Moderately	Agree Strongly
Credit and Delivery:							
29. Communicates details of credit policies to customer	1	2	3	4	5	6	7
30. Credit difficult to obtain	1	2	3	4	5	6	7
31. Delivery is too slow	1	2	3	4	5	6	7
32. Delivery is unreasonably long	1	2	3	4	5	6	7
33. Consistently meets delivery promises	1	2	3	4	5	6	7
Prices:							
34. Prices are usually low	1	2	3	4	5	6	7
35. Prices fluctuate frequently with little apparent reason	1	2	3	4	5	6	7
36. Prices are fixed, never increase for "unusual" occasions (e.g. rush job)	1	2	3	4	5	6	7
37. Frequently offers "specials"	1	2	3	4	5	6	7
38. Prices usually seem "fair"	1	2	3	4	5	6	7
Advertising:							
39. Advertises heavily	1	2	3	4	5	6	7
40. Uses direct mail advertising more than magazine advertising	1	2	3	4	5	6	7
41. Provides much product service information in advertisements	1	2	3	4	5	6	7
42. Communicates large amount of specific problem-oriented information	1	2	3	4	5	6	7
43. Advertising is of little help to customer	1	2	3	4	5	6	7
Salesmen:							
44. Outside salesmen call frequently	1	2	3	4	5	6	7
45. Inside salesmen telephone frequently	1	2	3	4	5	6	7
46. Salesmen act more as an extension of the basic mills' sales force than as service center representatives	1	2	3	4	5	6	7
47. Salesmen provide up-to-date technical information, advice and analysis of customer needs rather than simply taking orders	1	2	3	4	5	6	7
48. Inside and outside salesmen are coordinated as a team	1	2	3	4	5	6	7
49. Inside salesmen are more personal, friendly and sociable than business-like and professional.	1	2	3	4	5	6	7
50. Outside salesmen are more personal, friendly and sociable than business-like and professional	1	2	3	4	5	6	7
51. Outside salesmen are weak in product knowledge	1	2	3	4	5	6	7
52. Inside salesmen are weak in product knowledge.	1	2	3	4	5	6	7
53. Salesmen consistently follow-up on customer requests	1	2	3	4	5	6	7

PART THREE

You have rated Steel Service Centers under eight major categories. Would you please indicate the degree of importance each of these categories has for you.

Note: The higher the number, the more the importance.

ORGANIZATION

54. Unimportant::::::: Important
1 2 3 4 5 6 7

MANAGEMENT

55. Unimportant::::::: Important
1 2 3 4 5 6 7

PRODUCTS

56. Unimportant::::::: Important
1 2 3 4 5 6 7

INVENTORY

57. Unimportant::::::: Important
1 2 3 4 5 6 7

CREDIT AND DELIVERY

58. Unimportant::::::: Important
1 2 3 4 5 6 7

PRICES

59. Unimportant::::::: Important
1 2 3 4 5 6 7

ADVERTISING

60. Unimportant::::::: Important
1 2 3 4 5 6 7

SALESMEN

61. Unimportant::::::: Important
1 2 3 4 5 6 7

PART FOUR

Thank you for your cooperation. Your answers will be grouped with all the others to obtain a total profile of steel service centers. Of course, individual replies will be held strictly confidential, and after the information has been categorized in the computer, your answer sheets will be destroyed to insure that no-one will see them. The following two questions are the categories under which your responses will be grouped.

62. Your position: Top executive directly responsible for steel service center policy and relations1.
Outside or field representative responsible for direct day-to-day contact with steel service centers2.
63. Mill type: One of the 10 largest mills in the U.S.A.1.
Smaller, more specialized mill2.

Any additional personal observations or comments
you may wish to make here would be appreciated.

1							
1	2	3	4	5	6	7	

DEPARTMENT OF MARKETING AND TRANSPORTATION ADMINISTRATION
GRADUATE SCHOOL OF BUSINESS ADMINISTRATION
MICHIGAN STATE UNIVERSITY

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This research is designed and conducted by the university. No names of individuals or firms will be identified in the text of the research report.

The purpose of this study is to determine how your steel service center compares to what you would like to see in the ideal or perfect steel service center. Under headings such as Management and Price you are asked to make judgments about steel service centers against a series of descriptive scales. Your first judgments concern what you would expect of an ideal steel service center. Then, in part two, using the same descriptive scales, you are asked to position the steel service center with which you deal. Please make your judgment on the basis of what each factor means to **you**, checking the appropriate position along each scale to indicate how strongly you agree or disagree with the statement.

NOTE: 1. Place your check mark in the middle of the spaces, not in the dotted boundaries.

2. Do not omit any scale.

3. Do not put more than one check mark on any single space.

You may at times feel you have answered the same item before. This is not the case, so do not look back and forth through the items or try to remember how you checked similar items earlier. Make each item a separate and independent judgment. Work at a fairly high speed. Do not worry or spend a great deal of time puzzling individual items. Your first impressions, your immediate feelings, are what is wanted. However, do not be careless either, because your true impressions are desired.

PART ONE

Please indicate the position on each of the
following scales which represents your view

of

THE IDEAL STEEL SERVICE CENTER

Note: The higher the number, the more you agree.

	Disagree Strongly	Disagree Moderately	Disagree Slightly	Neither Agree nor Disagree	Agree Slightly	Agree Moderately	Agree Strongly
Organization:							
10. Is Large	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
11. Concentrates on imported metals	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
12. Earns large profits	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
13. Provides only limited emergency source of supply rather than serving total customer needs	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
14. Operates branches in large number of States	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
Management:							
15. Is poorly managed	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
16. Plans thoroughly for future	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
17. Policies are independent of basic mills' policies	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
18. Does not have well defined formal policies	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
19. Acts more as a purchasing agent for customers than as a sales agent for mill	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
Products:							
20. Carries a narrow range of product lines	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
21. Offers a wide range of quality choice	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
22. Quality consistency is variable	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
23. Quality exceeds customers' needs	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
24. Offers few pre-production services (slitting, heat-treating, etc.)	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
Inventory:							
25. Carries a wide variety of sizes, grades, shapes, qualities or steel	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
26. Carries broad range of metals and non-metals	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
27. Is frequently out of stock in some items	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
28. Permits customer to reduce inventory	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7

Note: The higher the number, the more you agree.

	Disagree Strongly	Disagree Moderately	Disagree Slightly	Neither Agree nor Disagree	Agree Slightly	Agree Moderately	Agree Strongly
Credit and Delivery:							
29. Communicates details of credit policies to customer	1	2	3	4	5	6	7
30. Credit difficult to obtain	1	2	3	4	5	6	7
31. Delivery is too slow	1	2	3	4	5	6	7
32. Delivery is unreasonably long	1	2	3	4	5	6	7
33. Consistently meets delivery promises	1	2	3	4	5	6	7
Prices:							
34. Prices are usually low	1	2	3	4	5	6	7
35. Prices fluctuate frequently with little apparent reason	1	2	3	4	5	6	7
36. Prices are fixed, never increase for "unusual" occasions (e.g. rush job)	1	2	3	4	5	6	7
37. Frequently offers "specials"	1	2	3	4	5	6	7
38. Prices usually seem "fair"	1	2	3	4	5	6	7
Advertising:							
39. Advertises heavily	1	2	3	4	5	6	7
40. Uses direct mail advertising more than magazine advertising	1	2	3	4	5	6	7
41. Provides much product service information in advertisements	1	2	3	4	5	6	7
42. Communicates large amount of specific problem-oriented information	1	2	3	4	5	6	7
43. Advertising is of little help to customer	1	2	3	4	5	6	7
Salesmen:							
44. Outside salesmen call frequently	1	2	3	4	5	6	7
45. Inside salesmen telephone frequently	1	2	3	4	5	6	7
46. Salesmen act more as an extension of the basic mills' sales force than as service center representatives	1	2	3	4	5	6	7
47. Salesmen provide up-to-date technical information, advice and analysis of customer needs rather than simply taking orders	1	2	3	4	5	6	7
48. Inside and outside salesmen are co-ordinated as a team	1	2	3	4	5	6	7
49. In _____ are more personal, friendly than business-	1	2	3	4	5	6	7
50. _____ are more personal, friendly than business-	1	2	3	4	5	6	7
51. _____ in product	1	2	3	4	5	6	7
52. _____ in product	1	2	3	4	5	6	7
53. _____ on	1	2	3	4	5	6	7

PART ONE

Please indicate the position on each of the
following scales which represents your view

of

THE IDEAL STEEL SERVICE CENTER

Note: The higher the number, the more you agree.

	Disagree Strongly	Disagree Moderately	Disagree Slightly	Neither Agree nor Disagree	Agree Slightly	Agree Moderately	Agree Strongly
Organization:							
10. Is Large	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
11. Concentrates on imported metals	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
12. Earns large profits	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
13. Provides only limited emergency source of supply rather than serving total customer needs	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
14. Operates branches in large number of States	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
Management:							
15. Is poorly managed	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
16. Plans thoroughly for future	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
17. Policies are independent of basic mills' policies	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
18. Does not have well defined formal policies	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
19. Acts more as a purchasing agent for customers than as a sales agent for mill	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
Products:							
20. Carries a narrow range of product lines	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
21. Offers a wide range of quality choice	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
22. Quality consistency is variable	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
23. Quality exceeds customers' needs	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
24. Offers few pre-production services (slitting, heat-treating, etc.)	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
Inventory:							
25. Carries a wide variety of sizes, grades, shapes, qualities or steel	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
26. Carries broad range of metals and non-metals	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
27. Is frequently out of stock in some items	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
28. Permits customer to reduce inventory	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7

Note: The higher the number, the more you agree.

	Disagree Strongly	Disagree Moderately	Disagree Slightly	Neither Agree nor Disagree	Agree Slightly	Agree Moderately	Agree Strongly
Credit and Delivery:							
29. Communicates details of credit policies to customer	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
30. Credit difficult to obtain	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
31. Delivery is too slow	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
32. Delivery is unreasonably long	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
33. Consistently meets delivery promises	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
Prices:							
34. Prices are usually low	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
35. Prices fluctuate frequently with little apparent reason	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
36. Prices are fixed, never increase for "unusual" occasions (e.g. rush job)	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
37. Frequently offers "specials"	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
38. Prices usually seem "fair"	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
Advertising:							
39. Advertises heavily	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
40. Uses direct mail advertising more than magazine advertising	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
41. Provides much product service information in advertisements	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
42. Communicates large amount of specific problem-oriented information	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
43. Advertising is of little help to customer	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
Salesmen:							
44. Outside salesmen call frequently	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
45. Inside salesmen telephone frequently	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
46. Salesmen act more as an extension of the basic mills' sales force than as service center representatives	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
47. Salesmen provide up-to-date technical information, advice and analysis of customer needs rather than simply taking orders	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
48. Inside and outside salesmen are coordinated as a team	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
49. I am more personal, friendly than business-like	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
50. I am more personal, friendly than business-like	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
51. I am more knowledgeable in product	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
52. I am more knowledgeable in product	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
53. Salesmen follow-up on customer orders	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7

PART TWO

Please indicate the position on each of the following scales which represents your view

of

YOUR ACTUAL STEEL SERVICE CENTER

Note: The higher the number, the more you agree.

Organization:

	Disagree Strongly	Disagree Moderately	Disagree Slightly	Neither Agree nor Disagree	Agree Slightly	Agree Moderately	Agree Strongly
10. Is Large	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
11. Concentrates on imported metals	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
12. Earns large profits	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
13. Provides only limited emergency source of supply rather than serving total customer needs	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
14. Operates branches in large number of States	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7

Management:

	Disagree Strongly	Disagree Moderately	Disagree Slightly	Neither Agree nor Disagree	Agree Slightly	Agree Moderately	Agree Strongly
15. Is poorly managed	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
16. Plans thoroughly for future	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
17. Policies are independent of basic mills' policies	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
18. Does not have well defined formal policies	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
19. Acts more as a purchasing agent for customers than as a sales agent for mill	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7

Products:

	Disagree Strongly	Disagree Moderately	Disagree Slightly	Neither Agree nor Disagree	Agree Slightly	Agree Moderately	Agree Strongly
20. Carries a narrow range of product lines	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
21. Offers a wide range of quality choice	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
22. Quality consistency is variable	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
23. Quality exceeds customers' needs	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
24. Offers few pre-production services (slitting, heat-treating, etc.)	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7

Inventory:

	Disagree Strongly	Disagree Moderately	Disagree Slightly	Neither Agree nor Disagree	Agree Slightly	Agree Moderately	Agree Strongly
25. Carries a wide variety of sizes, grades, shapes, qualities or steel	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
26. Carries broad range of metals and non-metals	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
27. Is frequently out of stock in some items	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
28. Permits customer to reduce inventory	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7

Note: The higher the number, the more you agree.

	Disagree Strongly	Disagree Moderately	Disagree Slightly	Neither Agree nor Disagree	Agree Slightly	Agree Moderately	Agree Strongly
Credit and Delivery:							
29. Communicates details of credit policies to customer : 1 : 2 : 3 : 4 : 5 : 6 : 7
30. Credit difficult to obtain : 1 : 2 : 3 : 4 : 5 : 6 : 7
31. Delivery is too slow : 1 : 2 : 3 : 4 : 5 : 6 : 7
32. Delivery is unreasonably long : 1 : 2 : 3 : 4 : 5 : 6 : 7
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Prices:							
34. Prices are usually low : 1 : 2 : 3 : 4 : 5 : 6 : 7
35. Prices fluctuate frequently with little apparent reason : 1 : 2 : 3 : 4 : 5 : 6 : 7
36. Prices are fixed, never increase for "unusual" occasions (e.g. rush job) : 1 : 2 : 3 : 4 : 5 : 6 : 7
37. Frequently offers "specials" : 1 : 2 : 3 : 4 : 5 : 6 : 7
38. Prices usually seem "fair" : 1 : 2 : 3 : 4 : 5 : 6 : 7
Advertising:							
39. Advertises heavily : 1 : 2 : 3 : 4 : 5 : 6 : 7
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47. Salesmen provide up-to-date technical information, advice and analysis of customer needs rather than simply taking orders : 1 : 2 : 3 : 4 : 5 : 6 : 7
48. Inside and outside salesmen are coordinated as a team : 1 : 2 : 3 : 4 : 5 : 6 : 7
49. Salesmen are more personal, friendly and sociable than business-professional : 1 : 2 : 3 : 4 : 5 : 6 : 7
50. Salesmen are more personal, friendly and sociable than business-professional : 1 : 2 : 3 : 4 : 5 : 6 : 7
51. Salesmen are weak in product knowledge : 1 : 2 : 3 : 4 : 5 : 6 : 7
52. Salesmen are weak in product knowledge : 1 : 2 : 3 : 4 : 5 : 6 : 7
53. Salesmen are weak in product knowledge : 1 : 2 : 3 : 4 : 5 : 6 : 7

PART THREE

You have rated Steel Service Centers under eight major categories. Would you please indicate the degree of importance each of these categories has for you.

Note: The higher the number, the more the importance.

ORGANIZATION

54. Unimportant 1 2 3 4 5 6 7 Important

MANAGEMENT

55. Unimportant::::::: Important

1 2 3 4 5 6 7

PRODUCTS

56. Unimportant::::::: Important
 1 2 3 4 5 6 7

INVENTORY

57. Unimportant::::::: Important

1 2 3 4 5 6 7

CREDIT AND DELIVERY

58. Unimportant::::::: Important

1 2 3 4 5 6 7

PRICES

59. Unimportant::::::: Important

1 2 3 4 5 6 7

ADVERTISING

60. Unimportant 1 2 3 4 5 6 7 Important

SALESMEN

61. Unimportant::::::: Important

1 2 3 4 5 6 7

PART FOUR

Thank you for your cooperation. Your answers will be grouped with all the others to obtain a total profile of steel service centers. Of course, individual replies will be held strictly confidential, and after the information has been categorized in the computer, your answer sheets will be destroyed to insure that no-one will see them. The categories into which the information will be grouped form this part of the questionnaire. Would you please indicate, for your **branch** or **location**

62. Your position: Chief Executive Officer or General Manager1.

Member of Executive group2.

City:

63. Geographic Region (as specified by SSCI 1969-70 Roster of Members)

Atlantic States Region1.

Great Lakes States Region2.

Central States Region3.

Southern States Region4.

Rocky Mountain States Region5.

Pacific States Region6.

64. Company Size (for your branch)

Sales less than \$1 million1.

Sales \$1-\$4.9 million2.

Sales \$5-\$9.9 million3.

Sales \$10-\$24.9 million4.

Sales \$25 million or more5.

65. Company Type by Source of Income

Major Source of Income	Second Most Important Source of Income	
Steel 90-100% —	.....	1.
Steel 50-89% —	Fabricating 0-49%	2.
Steel 50-89% —	Wholesale Hardware and Merchant Products 0-49%	3.
Steel 50-89% —	Non-ferrous 0-49%	4.
Fabricating 50-89% —	Steel 0-49%	5.
Wholesale and Hardware Merchant Products 50-89% —	Steel 0-49%	6.
Non-ferrous Metals and Misc. 50-89% —	Steel 0-49%	7.

66. Amount of Processing

0-25%1.

26-50%2.

51-75%3.

More than 76%4.

67. Company Type by Product Line

general line house	.....1.
specialty house	.....2.

68. Profit Category—branch or location 1968 profit as a percentage of sales after tax (or a representative average if 1968 was an unusually high or low profit year for your branch)

loss	.....1.
0-1.9%	.....2.
2-2.9%	.....3.
3-3.9%	.....4.
4-5.9%	.....5.
More than 6.0%	.....6.

69. Number of Employees in Your Branch Location:

0- 19 employees	.....1.
20- 29 employees	.....2.
30- 49 employees	.....3.
50- 74 employees	.....4.
75- 99 employees	.....5.
100-199 employees	.....6.
200-499 employees	.....7.
More than 500 employees	.....8.

70. Total Number of Service Center Branches or Locations operated by your Company's Head Office

single location1.
2 locations2.
3-8 locations3.
9-15 locations4.
16 or more5.

1							
1	2	3	4	5	6	7	

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This research is designed and conducted by the university. No names of individuals or firms will be identified in the text of the research report.

The purpose of this study is to determine how your steel service center compares to what you would like to see in the ideal or perfect steel service center. Under headings such as Management and Price you are asked to make judgments about steel service centers against a series of descriptive scales. Your first judgments concern what you would expect of an ideal steel service center. Then, in part two, using the same descriptive scales, you are asked to position the steel service center with which you deal. Please make your judgment on the basis of what each factor means to **you**, checking the appropriate position along each scale to indicate how strongly you agree or disagree with the statement.

NOTE: 1. Place your check mark in the middle of the spaces, not in the dotted boundaries.

2. Do not omit any scale.

3. Do not put more than one check mark on any single space.

You may at times feel you have answered the same item before. This is not the case, so do not look back and forth through the items or try to remember how you checked similar items earlier. Make each item a separate and independent judgment. Work at a fairly high speed. Do not worry or spend a great deal of time puzzling individual items. Your first impressions, your immediate feelings, are what is wanted. However, do not be careless either, because your true impressions are desired.

PART ONE

Please indicate the position on each of the
following scales which represents your view

of

THE IDEAL STEEL SERVICE CENTER

Note: The higher the number, the more you agree.

	Disagree Strongly	Disagree Moderately	Disagree Slightly	Neither Agree nor Disagree	Agree Slightly	Agree Moderately	Agree Strongly
Organization:							
10. Is Large	1	2	3	4	5	6	7
11. Concentrates on imported metals	1	2	3	4	5	6	7
12. Earns large profits	1	2	3	4	5	6	7
13. Provides only limited emergency source of supply rather than serving total customer needs	1	2	3	4	5	6	7
14. Operates branches in large number of States	1	2	3	4	5	6	7
Management:							
15. Is poorly managed	1	2	3	4	5	6	7
16. Plans thoroughly for future	1	2	3	4	5	6	7
17. Policies are independent of basic mills' policies	1	2	3	4	5	6	7
18. Does not have well defined formal policies	1	2	3	4	5	6	7
19. Acts more as a purchasing agent for customers than as a sales agent for mill	1	2	3	4	5	6	7
Products:							
20. Carries a narrow range of product lines	1	2	3	4	5	6	7
21. Offers a wide range of quality choice	1	2	3	4	5	6	7
22. Quality consistency is variable	1	2	3	4	5	6	7
23. Quality exceeds customers' needs	1	2	3	4	5	6	7
24. Offers few pre-production services (slitting, heat-treating, etc.)	1	2	3	4	5	6	7
Inventory:							
25. Carries a wide variety of sizes, grades, shapes, qualities or steel	1	2	3	4	5	6	7
26. Carries broad range of metals and non-metals	1	2	3	4	5	6	7
27. Is frequently out of stock in some items	1	2	3	4	5	6	7
28. Permits customer to reduce inventory	1	2	3	4	5	6	7

Note: The higher the number, the more you agree.

	Disagree Strongly	Disagree Moderately	Disagree Slightly	Neither Agree nor Disagree	Agree Slightly	Agree Moderately	Agree Strongly
Credit and Delivery:							
1. Communicates details of credit policies to customer	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
2. Credit difficult to obtain	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
3. Delivery is too slow	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
4. Delivery is unreasonably long	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
5. Consistently meets delivery promises	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
Prices:							
6. Prices are usually low	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
7. Prices fluctuate frequently with little apparent reason	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
8. Prices are fixed, never increase for "unusual" occasions (e.g. rush job)	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
9. Frequently offers "specials"	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
10. Prices usually seem "fair"	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
Advertising:							
11. Advertises heavily	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
12. Uses direct mail advertising more than magazine advertising	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
13. Provides much product service information in advertisements	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
14. Communicates large amount of specific problem-oriented information	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
15. Advertising is of little help to customer	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
Salesmen:							
16. Outside salesmen call frequently	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
17. Inside salesmen telephone frequently	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
18. Salesmen act more as an extension of the basic mills' sales force than as service center representatives	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
19. Salesmen provide up-to-date technical information, advice and analysis of customer needs rather than simply taking orders	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
20. Inside and outside salesmen are co-ordinated as a team	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
21. Inside salesmen are more personal, friendly and sociable than business-like and professional.	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
22. Outside salesmen are more personal, friendly and sociable than business-like and professional	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
23. Outside salesmen are weak in product knowledge	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
24. Inside salesmen are weak in product knowledge.	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7
25. Salesmen consistently follow-up on customer requests	..... 1	..... 2	..... 3	..... 4	..... 5	..... 6	..... 7

PART TWO

Please indicate the position on each of the following scales which represents your view

of

YOUR ACTUAL STEEL SERVICE CENTER

Note: The higher the number, the more you agree.

	Disagree Strongly	Disagree Moderately	Disagree Slightly	Neither Agree nor Disagree	Agree Slightly	Agree Moderately	Agree Strongly
Organization:							
10. Is Large	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
11. Concentrates on imported metals	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
12. Earns large profits	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
13. Provides only limited emergency source of supply rather than serving total customer needs	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
14. Operates branches in large number of States	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
Management:							
15. Is poorly managed	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
16. Plans thoroughly for future	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
17. Policies are independent of basic mills' policies	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
18. Does not have well defined formal policies	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
19. Acts more as a purchasing agent for customers than as a sales agent for mill	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
Products:							
20. Carries a narrow range of product lines	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
21. Offers a wide range of quality choice	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
22. Quality consistency is variable	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
23. Quality exceeds customers' needs	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
24. Offers few pre-production services (slitting, heat-treating, etc.)	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
Inventory:							
25. Carries a wide variety of sizes, grades, shapes, qualities or steel	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
26. Carries broad range of metals and non-metals	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
27. Is frequently out of stock in some items	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
28. Permits customer to reduce inventory	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7

Note: The higher the number, the more you agree.

	Disagree Strongly	Disagree Moderately	Disagree Slightly	Neither Agree nor Disagree	Agree Slightly	Agree Moderately	Agree Strongly
Credit and Delivery:							
9. Communicates details of credit policies to customer	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
10. Credit difficult to obtain	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
11. Delivery is too slow	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
12. Delivery is unreasonably long	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
13. Consistently meets delivery promises	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
Prices:							
14. Prices are usually low	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
15. Prices fluctuate frequently with little apparent reason	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
16. Prices are fixed, never increase for "unusual" occasions (e.g. rush job)	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
17. Frequently offers "specials"	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
18. Prices usually seem "fair"	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
Advertising:							
19. Advertises heavily	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
20. Uses direct mail advertising more than magazine advertising	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
21. Provides much product service information in advertisements	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
22. Communicates large amount of specific problem-oriented information	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
23. Advertising is of little help to customer	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
Salesmen:							
24. Outside salesmen call frequently	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
25. Inside salesmen telephone frequently	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
26. Salesmen act more as an extension of the basic mills' sales force than as service center representatives	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
27. Salesmen provide up-to-date technical information, advice and analysis of customer needs rather than simply taking orders	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
28. Inside and outside salesmen are coordinated as a team	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
29. Inside salesmen are more personal, friendly and sociable than business-like and professional.	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
30. Outside salesmen are more personal, friendly and sociable than business-like and professional	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
31. Outside salesmen are weak in product knowledge	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
32. Inside salesmen are weak in product knowledge.	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7
33. Salesmen consistently follow-up on customer requests	.....: 1	.....: 2	.....: 3	.....: 4	.....: 5	.....: 6	.....: 7

PART THREE

You have rated Steel Service Centers under eight major categories. Would you please indicate the degree of importance each of these categories has for you.

Note: The higher the number, the more the importance.

ORGANIZATION

54. Unimportant::::::: Important

1 2 3 4 5 6 7

MANAGEMENT

55. Unimportant::::::: Important

1 2 3 4 5 6 7

PRODUCTS

56. Unimportant::::::: Important

1 2 3 4 5 6 7

INVENTORY

57. Unimportant 1 : 2 : 3 : 4 : 5 : 6 : 7 : Important

CREDIT AND DELIVERY

58. Unimportant : : : : : : : Important

1 2 3 4 5 6 7

PRICES

59. Unimportant : : : : : : : Important

1 2 3 4 5 6 7

ADVERTISING

60. Unimportant::::::: Important

1 2 3 4 5 6 7

SALESMEN

61. Unimportant 1 2 3 4 5 6 7 Important

PART FOUR

Thank you for your cooperation. Your answers will be grouped with all the others to obtain a total profile of steel service centers. Of course, individual replies will be held strictly confidential, and after the information has been categorized in the computer, your answer sheets will be destroyed to insure that no-one will see them. The following two questions are the categories under which your responses will be grouped.

62. My steel service center purchases are primarily:

- (a) production metal1.
- (b) tool and die, maintenance
and repair steel2.

63. The average number of factory or production workers in my plant is:

- 0- 91.
- 10- 19 2.
- 20- 293.
- 30- 494.
- 50- 745.
- 75- 996.
- 100-1997.
- 200-4998.
- More than 5009.

Any additional personal observations or comments
you may wish to make here would be appreciated.

APPENDIX C

CUSTOMER LIST REPLY FORM

APPENDIX C CUSTOMER LIST REPLY FORM

3	4	5

MICHIGAN STATE UNIVERSITY EAST LANSING • MICHIGAN 48825

GRADUATE SCHOOL OF BUSINESS ADMINISTRATION

DEPARTMENT OF MARKETING AND TRANSPORTATION ADMINISTRATION • EPPLEY CENTER

REPRESENTATIVE CUSTOMER GROUP

Please list the name and address of the person responsible for buying from your steel service center for each of the 10 customer firms which you feel represents a cross-section of your customer list.

1. Name	Company		
Address	City	State	Zip
2. Name	Company		
Address	City	State	Zip
3. Name	Company		
Address	City	State	Zip
4. Name	Company		
Address	City	State	Zip
5. Name	Company		
Address	City	State	Zip
6. Name	Company		
Address	City	State	Zip
7. Name	Company		
Address	City	State	Zip
8. Name	Company		
Address	City	State	Zip
9. Name	Company		
Address	City	State	Zip
10. Name	Company		
Address	City	State	Zip

May we use your name to introduce
ourselves to these people?

Yes
No
Have no preference

APPENDIX D
MEAN RESPONSES ON IMAGE VARIABLES

APPENDIX D1

BASIC MILLS' MEAN RESPONSES ON IMAGE VARIABLES

IDEAL IMAGE				ACTUAL IMAGE		
Variable Number	Ideal Mean	Standard Deviation	Standard Error of Mean	Actual Mean	Standard Deviation	Standard Error of Mean
1	4.8427	1.5514	.1644	4.8315	1.3918	.1475
2	1.4494	1.0681	.1130	2.5000	1.6884	.1800
3	4.5618	1.8584	.1970	3.4045	1.6287	.1726
4	1.9663	1.3522	.1433	2.6067	1.5420	.1634
5	4.5056	1.6728	.1773	4.4270	1.8641	.1976
6	1.4831	1.1492	.1218	2.6067	1.5272	.1619
7	6.0449	1.5948	.1690	4.9888	1.5775	.1672
8	3.4831	2.0063	.2127	4.6292	1.6123	.1709
9	2.2135	1.7021	.1804	3.5054	1.8161	.1925
10	3.5506	2.1795	.2310	4.7303	1.7823	.1889
11	2.5506	1.7190	.1822	2.9101	1.5641	.1658
12	5.2360	1.7582	.1864	4.9326	1.7632	.1869
13	1.9551	1.4453	.1532	3.1236	1.6294	.1727
14	3.4382	1.6717	.1772	3.5169	1.5675	.1662
15	2.6404	1.7917	.1899	3.5169	1.6727	.1773
16	6.2247	1.0950	.1161	5.5955	1.2497	.1325
17	4.3933	1.7164	.1819	4.5843	1.6775	.1778
18	2.3820	1.6549	.1754	3.4719	1.4701	.1558
19	5.8202	1.4267	.1512	5.6292	1.0486	.1112
20	5.8764	1.3213	.1401	5.1685	1.3836	.1467
21	2.9775	1.5074	.1598	3.1011	1.4464	.1533
22	1.7303	1.2132	.1286	2.8539	1.3614	.1443
23	1.7753	1.4829	.1572	2.4157	1.3552	.1437
24	6.2809	1.3055	.1384	5.2697	1.2592	.1335
25	3.1011	1.5670	.1661	3.3933	1.4895	.1579
26	2.1573	1.6389	.1735	2.7753	1.3797	.1462
27	3.6292	1.9965	.2116	3.8202	1.7746	.1881
28	2.9213	1.7071	.1810	3.3371	1.5807	.1676
29	6.2472	1.1004	.1166	5.6404	1.1406	.1209
30	4.1461	1.5707	.1665	3.7528	1.8297	.1923
31	5.0787	1.4634	.1551	4.5730	1.4685	.1557
32	5.3034	1.4955	.1585	4.2584	1.5115	.1602
33	5.0000	1.6989	.1801	3.8315	1.6113	.1708
34	2.0000	1.7645	.1870	3.6180	1.7354	.1839
35	6.2247	1.1155	.1182	5.8427	1.0542	.1117
36	5.9101	1.2671	.1343	5.7011	1.4228	.1508
37	2.8427	1.7510	.1856	2.4045	1.2678	.1344
38	5.6517	1.8180	.1925	4.2247	1.6497	.1749
39	6.3371	1.3051	.1383	5.3820	1.2569	.1332
40	3.7978	1.8102	.1919	3.9888	1.5262	.1618
41	3.8652	1.7201	.1823	4.3483	1.4389	.1525
42	2.2697	1.7759	.1882	3.7079	1.7851	.1892
43	2.2809	1.7254	.1829	3.5169	1.7524	.1857
44	6.0337	1.5554	.1649	4.9663	1.3689	.1451

APPENDIX D2

STEEL SERVICE CENTERS' MEAN RESPONSES ON IMAGE VARIABLES

IDEAL IMAGE				ACTUAL IMAGE		
Variable Number	Ideal Mean	Standard Deviation	Standard Error of Mean	Actual Mean	Standard Deviation	Standard Error of Mean
1	4.7431	1.6381	.0784	4.4335	2.0189	.0967
2	1.9427	1.4073	.0674	1.9151	1.5176	.0727
3	4.8601	1.9573	.0937	4.3945	1.8609	.0894
4	1.8647	1.5618	.0748	2.3326	1.8080	.0865
5	4.3096	1.9565	.0937	3.8165	2.4464	.1172
6	1.5298	1.3464	.0645	2.4358	1.7414	.0834
7	6.0894	1.5942	.0763	4.9794	1.8073	.0866
8	5.0482	1.8619	.0892	5.1399	1.8398	.0881
9	2.1147	1.6233	.0777	3.2018	1.9735	.0945
10	4.3394	2.2498	.1077	4.1606	2.1965	.1052
11	2.1193	1.5579	.0746	2.7913	2.0365	.0975
12	5.3440	1.9360	.0927	4.7110	2.1429	.1026
13	2.0459	1.6492	.0790	2.4725	1.7828	.0854
14	3.8368	1.8624	.0893	4.0161	1.8513	.0887
15	2.6628	1.9812	.0949	3.3280	2.1486	.1029
16	6.1193	1.3164	.0630	5.5321	1.7956	.0860
17	4.3211	1.9891	.0953	3.7385	2.2202	.1063
18	2.6376	1.8832	.0902	3.7638	1.8941	.0907
19	6.1170	1.4408	.0690	5.8257	1.4197	.0680
20	6.0550	1.3241	.0634	5.4014	1.5893	.0761
21	2.7798	1.5631	.0749	3.0828	1.6635	.0798
22	1.7110	1.3743	.0658	2.8073	1.8105	.0867
23	1.5298	1.1944	.0572	2.3303	1.6389	.0785
24	6.2936	1.3325	.0638	5.0849	1.7139	.0821
25	2.9587	1.6535	.0792	3.1078	1.5521	.0743
26	1.8486	1.3880	.0665	2.1032	1.5073	.0722
27	4.0894	2.2882	.1096	4.0436	2.2253	.1066
28	3.1193	1.8506	.0886	2.8532	1.8033	.0864
29	6.3853	.9580	.0459	6.1514	1.0764	.0516
30	3.6950	1.6445	.0788	2.8234	1.7547	.0840
31	4.7408	1.6635	.0797	3.8670	2.1293	.1020
32	4.8417	1.7060	.0817	3.6078	2.0205	.0968
33	4.5642	1.7546	.0840	3.4587	1.9204	.0920
34	3.2798	1.8519	.0887	3.5917	1.8541	.0888
35	5.9151	1.2953	.0620	5.5482	1.4871	.0712
36	4.9908	1.7642	.0845	3.9197	1.9035	.0912
37	1.7683	1.1896	.0570	1.9771	1.3677	.0655
38	6.1674	1.3820	.0662	5.0528	1.8155	.0869
39	6.4450	1.1180	.0535	5.3463	1.7451	.0836
40	3.4679	1.9444	.0941	3.5390	1.8398	.0881
41	3.5046	1.9423	.0930	3.8050	1.8411	.0882
42	1.9748	1.6656	.0798	3.2041	1.9099	.0915
43	1.8234	1.4944	.0716	2.9862	1.8643	.0893
44	6.2451	1.4082	.0673	5.4358	1.5110	.0724

APPENDIX D3

CUSTOMERS' MEAN RESPONSES ON IMAGE VARIABLES

IDEAL IMAGE				ACTUAL IMAGE		
Variable Number	Ideal Mean	Standard Deviation	Standard Error of Mean	Actual Mean	Standard Deviation	Standard Error of Mean
1	4.7918	1.5515	.0812	4.6767	1.6289	.0853
2	2.2082	1.4696	.0769	2.2000	1.5339	.0803
3	3.5289	1.5754	.0827	3.6219	1.4693	.0769
4	2.1781	1.8601	.0974	2.7868	1.8779	.0983
5	4.4082	1.7448	.0913	3.8849	2.0630	.1080
6	1.6683	1.3667	.0715	2.7699	1.6912	.0885
7	6.0438	1.4966	.0783	5.2630	1.5484	.0810
8	4.8548	1.8482	.0967	4.6575	1.6758	.0877
9	2.6247	1.8469	.0967	3.0384	1.6931	.0886
10	4.6329	2.2193	.1162	4.2955	2.8646	.1081
11	2.0274	1.5333	.0803	2.6274	1.6783	.0878
12	5.8164	1.6178	.0847	5.0767	1.6755	.0877
13	2.0110	1.5828	.0828	2.7836	1.7176	.0899
14	3.9671	1.9298	.1010	3.7123	1.6910	.0885
15	3.4795	2.1116	.1105	3.7836	1.9371	.1014
16	6.3896	1.1579	.0606	5.5836	1.5288	.0880
17	4.8027	1.9228	.1006	4.2329	1.9253	.1008
18	2.2192	1.7181	.0895	3.2575	1.7618	.0922
19	5.9534	1.5952	.0835	5.1507	1.7022	.0891
20	5.6274	1.5596	.0816	4.9370	1.5963	.0836
21	2.7178	1.6805	.0880	2.5659	1.5351	.0805
22	2.1507	1.7405	.0911	2.8247	1.8343	.0968
23	1.8137	1.5185	.0795	2.4247	1.6913	.0885
24	6.1973	1.4429	.0755	5.2164	1.6967	.0888
25	4.5151	1.8629	.0975	3.9233	1.5897	.0832
26	2.0055	1.5082	.0789	2.4959	1.5686	.0823
27	4.8544	2.1801	.1143	4.4548	2.1152	.1107
28	3.8767	1.8348	.0960	3.8219	1.7224	.0902
29	5.9945	1.3687	.0717	5.7233	1.2978	.0679
30	3.5987	1.5658	.0821	3.3233	1.7414	.0912
31	4.3342	1.6368	.0857	3.8219	1.7786	.0931
32	4.5973	1.6656	.0872	3.6521	1.7374	.0909
33	4.7885	1.6487	.0864	3.7288	1.7130	.0897
34	3.9616	1.9183	.1004	4.1753	1.8611	.0974
35	4.9479	1.6919	.0886	4.9753	1.6247	.0850
36	3.3781	1.8684	.0974	3.1863	1.8571	.0972
37	2.5233	1.6198	.0848	2.7479	1.5664	.0872
38	5.8000	1.6328	.0855	4.7918	1.8309	.0958
39	6.1374	1.4114	.0740	5.2274	1.6659	.0872
40	4.0000	1.9129	.1001	3.8481	1.7618	.0922
41	4.1863	1.8922	.0990	4.1726	1.8082	.0946
42	2.1896	1.5588	.0816	2.9315	1.7769	.0930
43	2.0658	1.5763	.0825	2.8438	1.7146	.0897
44	5.7418	1.7469	.0916	5.0000	1.8014	.0944

APPENDIX E

TESTS OF SIGNIFICANT DIFFERENCE

APPENDIX E1

PAIRED TEST OF SIGNIFICANT DIFFERENCE ON BASIC MILL VARIABLES

VARIABLE	SIGMA D	SIGMA D SQ	DBAR	STD DEV	Z	LEVEL OF SIGNIFICANCE
1	1.00000	147.00000	.01124	1.29241	.08202	n.s.
2	-95.00000	431.00000	-1.06742	1.93530	-5.20331	.0001
3	101.00000	427.00000	1.15730	1.87021	5.83782	.0001
4	-57.00000	257.00000	-.64045	1.58291	-3.81700	.001
5	7.00000	295.00000	.07865	1.82921	.40564	n.s.
6	-100.00000	330.00000	-1.12360	1.57264	-6.74026	.0001
7	94.00000	426.00000	1.05618	1.92684	5.17115	.0001
8	-102.00000	442.00000	-1.14607	1.92206	-5.62519	.0001
9	-115.00000	593.00000	-1.29213	2.24723	-5.42444	.0001
10	-105.00000	555.00000	-1.17978	2.21340	-5.02846	.0001
11	-32.00000	266.00000	-.35955	1.70058	-1.99461	.05
12	27.00000	261.00000	.30337	1.69494	1.68855	n.s.
13	-104.00000	436.00000	-1.16854	1.89038	-5.83161	.0001
14	-7.00000	211.00000	-.07865	1.54644	-.47981	n.s.
15	-78.00000	488.00000	-.87640	2.18372	-3.78619	.001
16	56.00000	220.00000	.62921	1.44900	4.09662	.0001
17	-17.00000	339.00000	-.19101	1.95330	-.92254	n.s.
18	-97.00000	465.00000	-1.08989	2.02058	-5.08863	.0001
19	17.00000	111.00000	.19101	1.10655	1.62847	n.s.
20	61.00000	197.00000	.70787	1.31601	5.07444	.0001
21	-11.00000	287.00000	-.12360	1.80164	-.64719	n.s.
22	-100.00000	310.00000	-1.12360	1.49864	-7.07308	.0001
23	-57.00000	357.00000	-.64045	1.90840	-3.16600	.01
24	90.00000	298.00000	1.01124	1.53367	6.22036	.0001
25	-26.00000	272.00000	-.29213	1.73338	-1.58996	n.s.
26	-55.00000	287.00000	-.61798	1.69562	-3.43826	.001
27	-17.00000	289.00000	-.19101	1.80200	-1.00000	n.s.
28	-37.00000	225.00000	-.41573	1.54338	-2.54117	.05
29	54.00000	184.00000	.60674	1.31095	4.36629	.0001
30	35.00000	179.00000	.39326	1.37029	2.70746	.01
31	45.00000	185.00000	.50562	1.35784	3.51294	.001
32	93.00000	293.00000	1.04494	1.49172	6.60846	.0001
33	104.00000	306.00000	1.16854	1.44785	7.61403	.0001
34	-55.00000	259.00000	-.61798	1.59905	-3.64592	.001
35	34.00000	106.00000	.38202	1.02808	3.50556	.001
36	77.00000	208.00000	.80899	1.30451	5.85048	.0001
37	39.00000	215.00000	.43820	1.49966	2.75662	.01
38	127.00000	525.00000	1.42697	1.97650	6.81103	.0001
39	85.00000	217.00000	.95506	1.24234	7.25242	.0001
40	-17.00000	231.00000	-.19101	1.67791	-1.07395	n.s.
41	-43.00000	249.00000	-.48315	1.61042	-2.83031	.01
42	-128.00000	640.00000	-1.43820	2.27614	-5.96097	.0001
43	-110.00000	580.00000	-1.23596	2.24632	-5.19070	.0001
44	95.00000	289.00000	1.06742	1.46006	6.89698	.0001

APPENDIX E2

PAIRED TEST OF SIGNIFICANT DIFFERENCE ON STEEL SERVICE CENTER VARIABLES

VARIABLE	SIGMA D	SIGMA n SQ	DNAR	STD DEV	Z	LEVEL OF SIGNIFICANCE
1	136.00000	1926.00000	.31121	2.07855	3.12996	.01
2	13.00000	911.00000	.02975	1.44519	.43031	n.s.
3	641.00000	2687.00000	1.46682	2.00159	15.31944	.0001
4	-205.00000	1887.00000	-.46911	2.02668	-4.83870	.0001
5	216.00000	1860.00000	.49428	2.00529	5.15272	.0001
6	-398.00000	2178.00000	-.91076	2.04060	-9.33008	.0001
7	487.00000	2507.00000	1.11442	2.12255	10.97564	.0001
8	-42.00000	1810.00000	-.09611	2.03522	-.98718	n.s.
9	-475.00000	2481.00000	-1.08696	2.12278	-10.70406	.0001
10	79.00000	1753.00000	.18078	1.99697	1.89241	n.s.
11	-294.00000	1882.00000	-.67277	1.96542	-7.15570	.0001
12	276.00000	1834.00000	.63158	1.95105	6.76704	.0001
13	-188.00000	1428.00000	-.43021	1.75776	-5.11631	.0001
14	-82.00000	1600.00000	-.18764	1.90642	-2.05757	.05
15	-291.00000	2567.00000	-.66590	2.33306	-5.96659	.0001
16	256.00000	1414.00000	.58581	1.70269	7.19223	.0001
17	257.00000	2175.00000	.58810	2.15450	5.70618	.0001
18	-494.00000	2646.00000	-1.13043	2.16815	-10.79964	.0001
19	129.00000	883.00000	.29519	1.39208	4.43286	.0001
20	245.00000	1167.00000	.65217	1.50010	9.08833	.0001
21	-132.00000	1306.00000	-.30206	1.70410	-3.70542	.001
22	-481.00000	2189.00000	-1.10069	1.95099	-11.79369	.0001
23	-349.00000	1681.00000	-.79863	1.79339	-9.30916	.0001
24	538.00000	2044.00000	1.21281	1.79270	14.14253	.0001
25	-64.00000	1210.00000	-.14645	1.65944	-1.84492	n.s.
26	-112.00000	1222.00000	-.25629	1.65436	-3.23852	.01
27	19.00000	1861.00000	.04348	2.06554	.44003	n.s.
28	117.00000	1167.00000	.26773	1.61393	3.46786	.001
29	102.00000	520.00000	.23341	1.06680	4.57381	.0001
30	342.00000	1872.00000	.87414	1.87822	9.72919	.0001
31	342.00000	2152.00000	.87414	2.04203	8.94869	.0001
32	539.00000	2599.00000	1.23341	2.10823	12.24169	.0001
33	482.00000	2646.00000	1.10297	2.20215	10.47031	.0001
34	-136.00000	1530.00000	-.31121	1.84719	-3.52198	.001
35	180.00000	956.00000	.36613	1.43468	5.33488	.0001
36	469.00000	1931.00000	1.07323	1.80954	12.39834	.0001
37	-91.00000	807.00000	-.20824	1.34442	-3.23793	.01
38	487.00000	2083.00000	1.11442	1.87956	12.39458	.0001
39	480.00000	1802.00000	1.09840	1.70991	13.42852	.0001
40	-30.00000	1276.00000	-.06865	1.76935	-.83956	n.s.
41	-132.00000	1162.00000	-.30206	1.60427	-3.93600	.0001
42	-538.00000	2334.00000	-1.23112	1.95808	-13.14351	.0001
43	-509.00000	2195.00000	-1.16476	1.91693	-12.70195	.0001
44	353.00000	1629.00000	.80778	1.75563	9.61837	.0001

APPENDIX E3

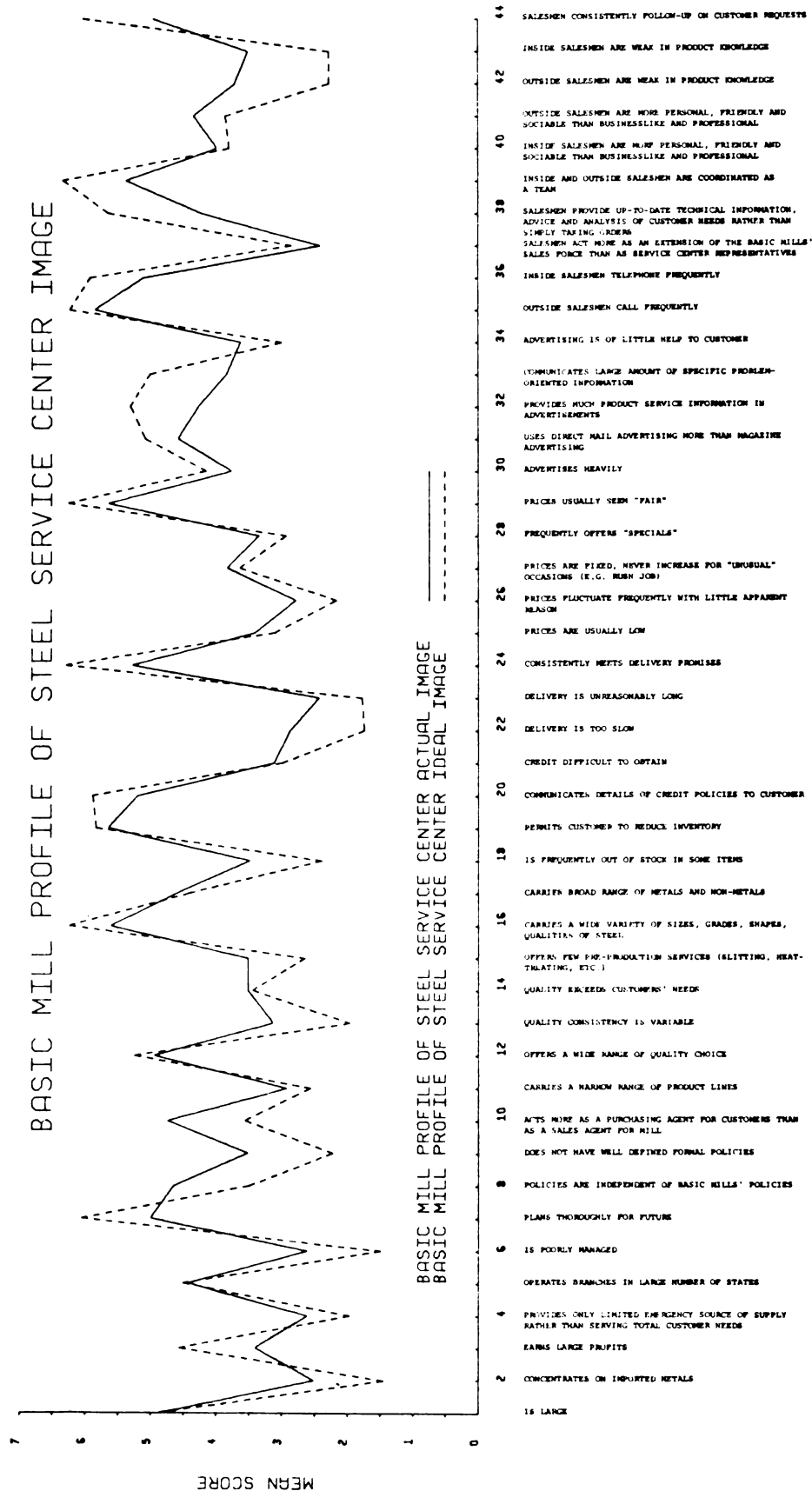
PAIRED TEST OF SIGNIFICANT DIFFERENCE ON CUSTOMER VARIABLES

VARIABLE	SIGMA D	SIGMA D SQ	DBAR	STD DEV	Z	LEVEL OF SIGNIFICANCE
1	42.00000	952.00000	.11602	1.61976	1.36284	n.s.
2	0.00000	810.00000	0.00000	1.49792	0.00000	n.s.
3	-36.00000	832.00000	-.09945	1.51486	-1.24904	n.s.
4	-193.00000	1497.00000	-.53315	1.96514	-5.16190	.0001
5	195.00000	1613.00000	.53867	2.04381	5.01463	.0001
6	-265.00000	1307.00000	-.73204	1.75588	-7.93224	.0001
7	285.00000	1439.00000	.78729	1.83429	8.16627	.0001
8	76.00000	1566.00000	.20994	2.07214	1.92771	n.s.
9	-154.00000	1874.00000	-.42541	2.23823	-3.61628	.001
10	153.00000	1593.00000	.42265	2.05757	3.90824	.001
11	-219.00000	1333.00000	-.60497	1.82360	-6.31190	.0001
12	270.00000	1722.00000	.74586	2.05237	6.91437	.0001
13	-288.00000	1436.00000	-.79558	1.82843	-8.27868	.0001
14	102.00000	1378.00000	.28177	1.93328	2.77301	.01
15	-104.00000	1562.00000	-.28729	2.06012	-2.65330	.01
16	265.00000	1125.00000	.73204	1.60592	8.67298	.0001
17	204.00000	1312.00000	.57459	1.81749	6.01500	.0001
18	-380.00000	1988.00000	-1.04972	2.09808	-9.51934	.0001
19	293.00000	1225.00000	.80939	1.65421	9.30940	.0001
20	250.00000	1200.00000	.69061	1.68696	7.78898	.0001
21	59.00000	1077.00000	.16298	1.71952	1.80340	n.s.
22	-247.00000	1445.00000	-.68232	1.88040	-6.90385	.0001
23	-221.00000	1175.00000	-.61602	1.69538	-6.91327	.0001
24	363.00000	1669.00000	1.00276	1.90130	10.03462	.0001
25	214.00000	1386.00000	.59116	1.86786	6.02165	.0001
26	-183.00000	1001.00000	-.50952	1.58638	-6.06304	.0001
27	147.00000	2112.00000	.39227	2.38665	3.12712	.01
28	318.00000	1530.00000	.87845	1.86129	8.97963	.0001
29	99.00000	767.00000	.27348	1.43166	3.63447	.001
30	99.00000	1119.00000	.27348	1.73917	2.99184	.01
31	193.00000	1495.00000	.53315	1.96373	5.16560	.0001
32	351.00000	1713.00000	.96961	1.94997	9.46072	.0001
33	392.00000	1838.00000	1.08287	1.97878	10.41203	.0001
34	-80.00000	1604.00000	-.22099	2.09624	-2.00583	.05
35	-4.00000	954.00000	-.01105	1.62559	-.12933	n.s.
36	75.00000	1157.00000	.20718	1.77819	2.21682	.05
37	-82.00000	1344.00000	-.22652	1.91613	-2.24924	.05
38	375.00000	1653.00000	1.03591	1.87159	10.53090	.0001
39	331.00000	1365.00000	.91989	1.71249	10.22026	.0001
40	59.00000	981.00000	.16298	1.64037	1.89041	n.s.
41	9.00000	979.00000	.02486	1.64660	.28728	n.s.
42	-306.00000	1570.00000	-.84530	1.90592	-8.43847	.0001
43	-292.00000	1434.00000	-.80663	1.82908	-8.40903	.0001
44	284.00000	1708.00000	.78453	2.02833	7.35912	.0001

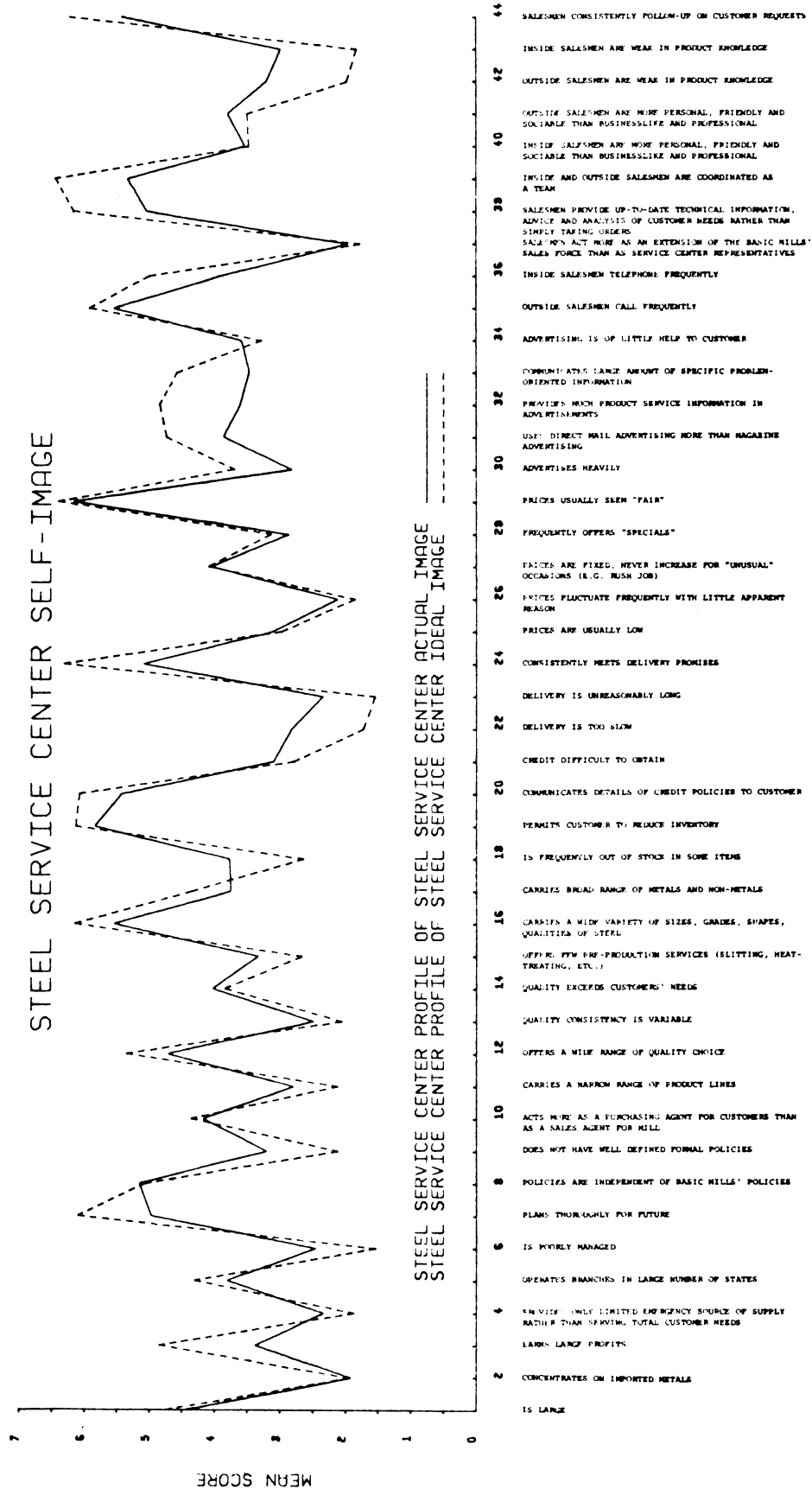
APPENDIX F

IMAGE VARIABLE PROFILES

APPENDIX F1

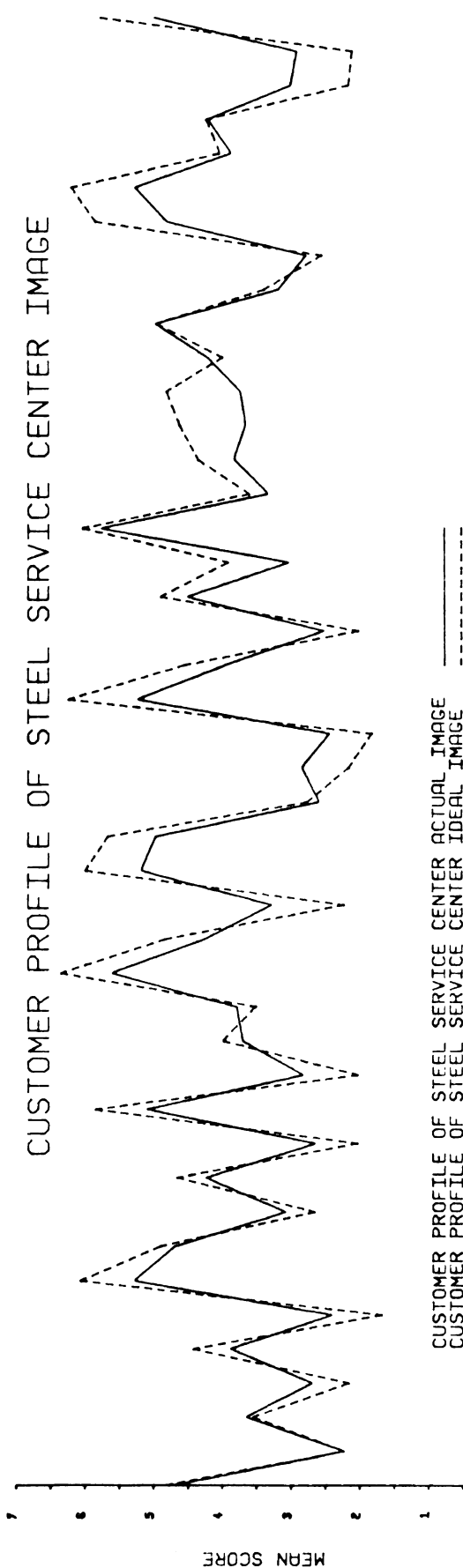


APPENDIX F2



APPENDIX F3

CUSTOMER PROFILE OF STEEL SERVICE CENTER IMAGE



- 44 SALESMEN CONSISTENTLY FOLLOW-UP ON CUSTOMER REQUESTS
- 42 INSIDE SALESMEN ARE WEAK IN PRODUCT KNOWLEDGE
- 40 OUTSIDE SALESMEN ARE WEAK IN PRODUCT KNOWLEDGE
- 38 OUTSIDE SALESMEN ARE MORE PERSONAL, FRIENDLY AND SOCIABLE THAN BUSINESSLIKE AND PROFESSIONAL
- 36 INSIDE SALESMEN ARE MORE PERSONAL, FRIENDLY AND SOCIABLE THAN BUSINESSLIKE AND PROFESSIONAL
- 34 INSIDE AND OUTSIDE SALESMEN ARE COORDINATED AS A TEAM
- 32 SALESMEN PROVIDE UP-TO-DATE TECHNICAL INFORMATION, ADVICE AND ANALYSIS OF CUSTOMER NEEDS RATHER THAN SIMPLY TAKING ORDERS
- 30 SALESMEN ACT MORE AS AN EXTENSION OF THE BASIC MILLS' SALES FORCE THAN AS SERVICE CENTER REPRESENTATIVES
- 28 INSIDE SALESMEN TELEPHONE FREQUENTLY
- 26 OUTSIDE SALESMEN CALL FREQUENTLY
- 24 ADVERTISING IS OF LITTLE HELP TO CUSTOMER
- 22 COMMUNICATES LARGE AMOUNT OF SPECIFIC PROBLEM-ORIENTED INFORMATION
- 20 PROVIDES MUCH PRODUCT SERVICE INFORMATION IN ADVERTISEMENTS
- 18 USES DIRECT MAIL ADVERTISING MORE THAN MAGAZINE ADVERTISING
- 16 ADVERTISES HEAVILY
- 14 PRICES USUALLY SEEM "FAIR"
- 12 FREQUENTLY OFFERS "SPECIALS"
- 10 PRICES ARE FIXED, NEVER INCREASE FOR "UNUSUAL" OCCASIONS (E.G. RUSH JOB)
- 8 PRICES FLUCTUATE FREQUENTLY WITH LITTLE APPARENT REASON
- 6 PRICES ARE USUALLY LOW
- 4 CONSISTENTLY MEETS DELIVERY PROMISES
- 2 DELIVERY IS UNREASONABLY LONG
- DELIVERY IS TOO SLOW
- CREDIT DIFFICULT TO OBTAIN
- COMMUNICATES DETAILS OF CREDIT POLICIES TO CUSTOMER
- PERMITS CUSTOMER TO REDUCE INVENTORY
- IS FREQUENTLY OUT OF STOCK IN SOME ITEMS
- CARRIES BROAD RANGE OF METALS AND NON-METALS
- CARRIES A WIDE VARIETY OF SIZES, GRADES, SHAPES, QUALITIES OF STEEL
- OFFERS FEW PRE-PRODUCTION SERVICES (SLITTING, HEAT-TREATING, ETC.)
- QUALITY EXCEEDS CUSTOMERS' NEEDS
- QUALITY CONSISTENCY IS VARIABLE
- OFFERS A WIDE RANGE OF QUALITY CHOICE
- CARRIES A NARROW RANGE OF PRODUCT LINES
- ACTS MORE AS A PURCHASING AGENT FOR CUSTOMERS THAN AS A SALES AGENT FOR MILL
- DOES NOT HAVE WELL DEFINED FORMAL POLICIES
- POLICIES ARE INDEPENDENT OF BASIC MILLS' POLICIES
- PLANS THOROUGHLY FOR FUTURE
- IS POORLY MANAGED
- OPERATES BRANCHES IN LARGE NUMBER OF STATES
- PROVIDES ONLY LIMITED EMERGENCY SOURCE OF SUPPLY RATHER THAN SERVING TOTAL CUSTOMER NEEDS
- EARNS LARGE PROFITS
- CONCENTRATES ON IMPORTED METALS
- IS LARGE

APPENDIX G

IMAGE CATEGORY IMPORTANCE

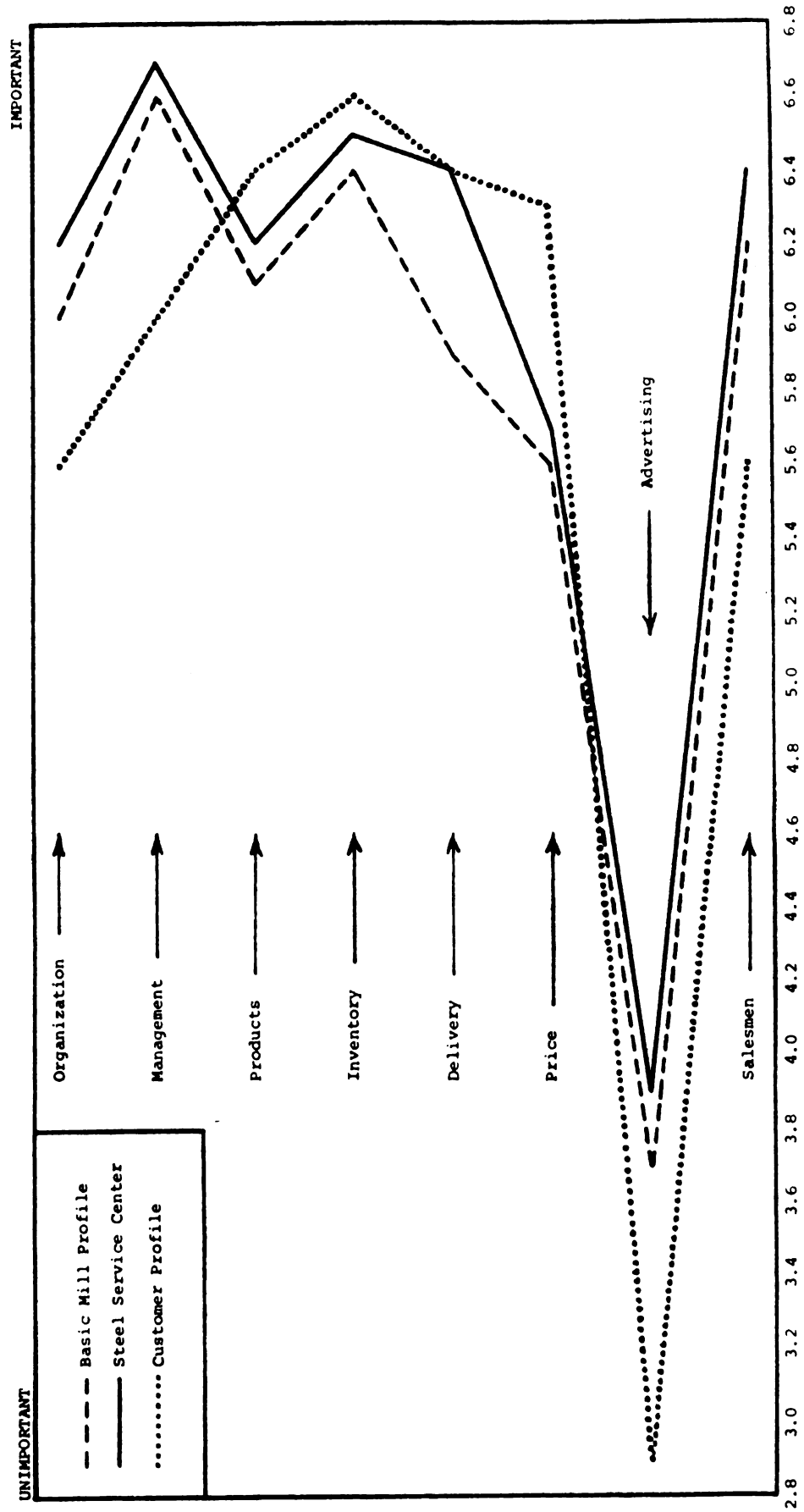
APPENDIX G1

IMAGE CATEGORY IMPORTANCE

RESPONDENT GROUP	IMAGE CATEGORY	MEAN IMPORTANCE	STANDARD DEVIATION	STANDARD ERROR OF MEAN
Basic Steel Mills	Organization	5.9888	1.1026	.1169
	Management	6.6292	.7132	.0756
	Products	6.1348	1.0465	.1109
	Inventory	6.3933	.7630	.0809
	Delivery	5.8764	1.2776	.1354
	Price	5.5618	1.3977	.1482
	Advertising	3.7191	1.6166	.1714
	Salesmen	6.1798	1.1828	.1254
Steel Service Centers	Organization	6.2018	1.1786	.0564
	Management	6.7087	.7144	.0342
	Products	6.2317	1.1642	.0558
	Inventory	6.5425	.8286	.0397
	Delivery	6.3876	.9291	.0445
	Price	5.6613	1.3259	.0636
	Advertising	3.8876	1.6014	.0767
	Salesmen	6.4014	1.0815	.0518
Customers	Organization	5.6164	1.5883	.0831
	Management	6.0438	1.3128	.0687
	Products	6.4490	.9830	.0516
	Inventory	6.6301	.7967	.0417
	Delivery	6.3945	1.0207	.0534
	Price	6.3096	1.0639	.0557
	Advertising	2.8712	1.6349	.0856
	Salesmen	5.5644	1.5080	.0789

APPENDIX G2

PROFILES OF IMAGE CATEGORY IMPORTANCE



APPENDIX H

QUESTION PHRASEOLOGY FOR FACTOR ANALYSIS

APPENDIX H

QUESTION PHRASEOLOGY FOR FACTOR ANALYSIS

Input Variable	Question Number	Input Phrasing
1	10.	Is Large
2	11.	Concentrates on domestic metals
3	12.	Earns large profits
4	13.	Serves total customer needs rather than providing only a limited emergency source of supply
5	14.	Operates branches in large number of States
6	15.	Is well managed
7	16.	Plans thoroughly for future
8	17.	Policies are independent of basic mills' policies
9	18.	Has well defined formal policies
10	19.	Acts more as a purchasing agent for customers than as a sales agent for mill
11	20.	Carries a broad range of product lines
12	21.	Offers a wide range of quality choice
13	22.	Quality consistency is not variable
14	23.	Quality exceeds customers' needs
15	24.	Offers many pre-production services (slitting, heat-treating, etc.)

Input Variable	Question Number	Input Phrasing
16	25.	Carries a wide variety of sizes, grades, shapes, qualities of steel
17	26.	Carries broad range of metals and non-metals
18	27.	Is not frequently out of stock
19	28.	Permits customer to reduce inventory
20	29.	Communicates details of credit policies to customers
21	30.	Credit easy to obtain
22	31.	Delivery is not too slow
23	32.	Delivery is not unreasonably long
24	33.	Consistently meets delivery promises
25	34.	Prices are usually low
26	35.	Prices do not fluctuate frequently with little apparent reason
27	36.	Prices are fixed, never increase for "unusual" occasions (e.g. rush jobs)
28	37.	Frequently offers "specials"
29	38.	Prices usually seem "fair"
30	39.	Advertises heavily
31	40.	Uses direct mail advertising more than magazine advertising
32	41.	Provides much product service information in advertisements
33	42.	Communicates large amount of specific problem-oriented information
34	43.	Advertising is of much help to customer

Input Variable	Question Number	Input Phrasing
35	44.	Outside salesmen call frequently
36	45.	Inside salesmen telephone frequently
37	46.	Salesmen act more as service center representatives than as an extension of the basic mills' sales force
38	47.	Salesmen provide up-to-date technical information, advice and analysis of customer needs rather than simply taking orders
39	48.	Inside and outside salesmen are co- ordinated as a team
40	49.	Inside salesmen are more businesslike and professional than personal, friendly and sociable
41	50.	Outside salesmen are more personal, friendly and sociable than business- like and professional
42	51.	Outside salesmen are strong in product knowledge
43	52.	Inside salesmen are strong in product knowledge
44	53.	Salesmen consistently follow-up on customer requests

APPENDIX I

ROTATED FACTOR STRUCTURES

APPENDIX II

FACTOR STRUCTURE FOR THE MILL IMAGE OF THE IDEAL CENTER

Variable	ROTATED FACTOR STRUCTURE										Question
	1	2	3	4	5	6	7	8	9	10	
1		.71									10
2											11
3									.64		12
4						.77					13
5		.56									14
6						.52					15
7									.57		16
8			-.77								17
9			.55								18
10			-.50								19
11					.54						20
12											21
13											22
14				-.57							23
15										.64	24
16					.67						25
17					.62						26
18								.50			27
19	.63										28
20	.52										29
21							.56				30
22											31
23											32
24											33
25							-.65				34
26							.74				35
27											36
28							-.51				37
29											38
30											39
31											40
32										.51	41
33										.62	42
34		.52									43
35	.85										44
36	.81										45
37				.52							46
38								.57			47
39	.55										48
40				.83							49
41				-.69							50
42								.89			51
43								.88			52
44								.51			53

APPENDIX I2

FACTOR STRUCTURE FOR THE MILL IMAGE OF ACTUAL CENTERS

[illegible]

APPENDIX I3

FACTOR STRUCTURE OF STEEL SERVICE CENTER IDEAL SELF-IMAGE

[illegible]

APPENDIX I4

FACTOR STRUCTURE OF STEEL SERVICE CENTER ACTUAL SELF-IMAGE

[illegible]

APPENDIX 15

FACTOR STRUCTURE FOR THE CUSTOMER IMAGE OF THE IDEAL CENTER

Variable	ROTATED FACTOR STRUCTURE										Question
	1	2	3	4	5	6	7	8	9	10	
1							.71				10
2					.57						11
3							.55				12
4											13
5							.56				14
6	.51										15
7											16
8								.63			17
9											18
10											19
11				.64							20
12				.64							21
13											22
14										.60	23
15											24
16				.66							25
17				.63							26
18	.56										27
19											28
20											29
21											30
22	.78										31
23	.86										32
24	.70										33
25											34
26	.60										35
27											36
28											37
29											38
30											39
31		.69									40
32		.81									41
33		.59									42
34		.60									43
35						.74					44
36						.73					45
37											46
38									.56		47
39									.61		48
40			.89								49
41			-.89								50
42									.79		51
43									.78		52
44									.59		53

APPENDIX I6

FACTOR STRUCTURE FOR THE CUSTOMER IMAGE OF THE ACTUAL CENTERS

[illegible]

APPENDIX 17

SAMPLE FACTOR ANALYSIS PRINT-OUT (SSC ACTUAL)

ROTATED FACTOR MATRIX

VARIABLE 1 .09755	.44132	.03152	-.00094	.63557	-.12025	.05478	-.06832	-.03644	-.04509
VARIABLE 2 .03563	.15107	.13344	.10246	-.08192	-.09941	.47023	-.02317	-.10256	.06544
VARIABLE 3 -.00266	-.19046	-.04731	-.00769	.62388	.12703	-.06438	.35795	.01257	.00828
VARIABLE 4 .08846	.32658	.27387	.16812	-.15818	-.01101	.11211	.06941	.13234	.41367
VARIABLE 5 -.05302	.27604	-.07486	.18990	.67231	.08570	.05788	-.12457	-.00020	.05222
VARIABLE 6 .26054	-.01802	.32464	.11014	.15906	.22965	.10662	.00351	.00617	.41471
VARIABLE 7 .14317	.10946	.15492	.25160	.34541	.06757	-.05594	.33202	.12919	.35654
VARIABLE 8 -.07725	.15769	.07214	-.02176	-.08410	.12065	.01945	.64934	.00124	.08410
VARIABLE 9 .29117	.09601	.17434	.11541	.23430	.24966	.19317	-.12867	.05828	.35319
VARIABLE 10 .12722	-.02666	-.04986	-.10031	-.08684	-.18938	.05217	.45181	-.17469	-.18610
VARIABLE 11 .01217	.76480	.03633	.02453	.05165	.05867	.07863	.04678	.12180	.17355
VARIABLE 12 .09764	.55397	.11567	.11788	.15711	.00309	-.00512	.17232	.01059	.09914
VARIABLE 13 -.06069	.05107	.30055	.19427	.06536	.24346	.36425	.11959	.28142	-.04612
VARIABLE 14 -.02972	.04326	.07521	.04719	.14747	.01925	-.06448	.45517	.02310	-.09659
VARIABLE 15 .03944	.28444	-.07616	.07259	-.00122	-.10666	.12447	-.08115	.22360	.43024
VARIABLE 16 .12916	.67467	.10306	.03851	-.00751	.04030	.16645	.17933	-.02452	-.08347
VARIABLE 17 -.04276	.63145	.00462	.23225	.08818	.07038	-.13445	-.08693	-.07667	-.08524
VARIABLE 18 -.19653	.01619	.44086	.06890	-.07792	.41049	.15152	.00566	.11982	.05089
VARIABLE 19 .27873	.10990	.27469	.19651	.00111	-.25049	.27643	.09197	-.01312	.02547
VARIABLE 20 .39582	.06517	.13251	.12735	.03989	.00626	.10371	.15493	.33936	.09218
VARIABLE 21 .13845	.07564	-.03353	-.08397	-.21099	.22012	.30838	.01348	-.05001	.43112
VARIABLE 22 .17381	.04132	.03137	.04788	-.02131	.11721	.09838	.03795	.00077	.11270
VARIABLE 23 .09859	.14579	.82087	-.02744	.00745	.08309	.18148	.01465	-.01170	.03983
VARIABLE 24 .17140	.04746	.73829	.13759	-.01468	.06307	.07040	.13416	.05889	-.08836
VARIABLE 25 -.04156	.14018	-.03646	.03937	-.28941	.01716	-.54883	.16318	-.14778	.02544
VARIABLE 26 .14675	.04238	.18938	-.01552	.03190	.13883	.67184	-.03989	.08946	.07889
VARIABLE 27 .17938	.17794	.04170	.07312	-.13745	-.02751	.15776	.08792	-.03207	-.51132
VARIABLE 28 .21581	.21154	.01357	-.05385	.06368	-.30414	-.46996	-.00007	-.02172	.14017
VARIABLE 29 -.19402	.16855	.08568	.08792	-.04576	.12725	.49828	.27052	.06531	.11710
VARIABLE 30 .01329	.28853	-.01893	.62883	.23121	.02905	-.00091	-.03719	.00704	-.11918
VARIABLE 31 .14162	.10995	.14649	.49360	-.16566	-.09813	.02465	-.16187	-.00446	-.05403
VARIABLE 32 .12505	.14799	.04852	.82182	.05217	.09475	.08520	-.02283	.04778	.03064
VARIABLE 33 .08741	.12274	.15003	.70267	.02720	.22065	.00130	.02034	.04638	.07512
VARIABLE 34 .06769	-.14176	-.06557	.58365	.09034	.05837	.09465	.18214	.06933	.15810
VARIABLE 35 .61429	.14934	-.04495	.01505	-.00894	.15057	.21454	-.13216	.07726	-.17730
VARIABLE 36 .70616	.03897	.09329	.22083	-.00098	.02458	-.15849	-.02476	.09113	.11263
VARIABLE 37 .31492	.16789	.11411	-.04398	-.09705	-.01416	.25152	.30789	.10756	.18124
VARIABLE 38 .32322	.07900	.04542	.22948	.11249	.55199	.19471	.15144	.20612	-.04814
VARIABLE 39 .59310	-.01909	.22270	.21852	.04476	.32100	.02179	-.06291	.01939	.18071
VARIABLE 40 .18474	.01831	-.00455	.04115	-.03166	.09316	.04269	-.04265	.88701	.09536
VARIABLE 41 -.14491	.00706	-.05925	-.03150	-.03074	-.23210	-.05594	.04334	-.03478	-.05796
VARIABLE 42 .18811	.03806	.11745	.05899	.03287	.78772	.10665	.04197	.12214	.84803
VARIABLE 43 .20885	.07791	.16596	.08709	.04668	.71194	-.03590	-.02491	.09172	.15193
VARIABLE 44 .53700	-.05467	.19126	-.81449	.00822	.29031	.19112	.18171	.07565	-.13239

APPENDIX J

REGRESSION OF VARIABLES ABOUT THEIR
INDEX OF INCONGRUITY

APPENDIX J1

REGRESSION OF 44 CUSTOMER VARIABLES ABOUT THEIR INDEX OF INCONGRUITY

SAMPLE SIZE 362
 NO. OF VARIABLES 45
 DEPENDENT VARIABLE IS NOW NO. 45
 COEFFICIENT OF DETERMINATION .3259
 MULTIPLE CORR. COEFFICIENT .5709
 SUM OF SQUARES ATTRIBUTABLE TO REGRESSION 2582778.93775
 SUM OF SQUARES OF DEVIATION FROM REGRESSION 5341877.92689
 VARIANCE OF ESTIMATE 16851.34993
 STD. ERROR OF ESTIMATE 129.81275
 INTERCEPT (A VALUE) 460.97474

ANALYSIS OF VARIANCE FOR THE MULTIPLE
 LINEAR REGRESSION

SOURCE OF VARIATION	D.F.	SUM OF SQUARES	MEAN SQUARES	F VALUE
DUE TO REGRESSION.....	44	2582778.93775	58699.52131	3.4834
DEVIATION ABOUT REGRESSION...	317	5341877.92689	16851.34993	
TOTAL...	361	7924656.86464		

VARIABLE NO.	MEAN	STD. DEVIATION	REG. COEFF.	PARTIAL CORR. COE.	SUM OF SQ. ADDED	PROP. VAR. CUM.
1	4.69337	1.63153	.94084	.00992	14438.14024	.00182
2	2.22376	1.53705	-.450761	-.04884	24989.31517	.00315
3	3.64917	1.45899	-1.50502	-.01507	66388.45793	.00838
4	2.68508	1.86831	-4.63503	-.05496	317337.08246	.04004
5	3.88122	2.06534	4.06641	.05762	3.84869	.00000
6	2.39503	1.71074	10.42689	.11613	522009.81495	.06587
7	5.26519	1.55646	-11.52346	-.10956	484999.22898	.06120
8	4.67127	1.68576	2.76798	.03240	182.41131	.00002
9	3.06077	1.70762	-.75219	-.00868	5491.07781	.00069
10	4.22099	2.06160	-2.96172	-.04463	14410.40919	.00182
11	2.62155	1.68022	2.67107	.02564	62144.56925	.00784
12	5.08011	1.68312	-6.32662	-.06102	135543.87180	.01710
13	2.80387	1.73531	11.38857	.12901	198346.15182	.02503
14	3.69061	1.68696	.64535	.00794	4771.42931	.00060
15	3.77624	1.94586	7.09159	.10302	60244.32038	.00760
16	5.59116	1.52858	5.92802	.04885	2698.18674	.00034
17	4.22376	1.93300	-5.20144	-.06401	24243.74266	.00306
18	3.25691	1.75911	12.20101	.13088	114773.41471	.01448
19	5.15746	1.69570	-5.96590	-.06839	37258.15033	.00470
20	4.94199	1.60313	-2.58887	-.02867	5651.12068	.00071
21	2.57459	1.53309	-1.95944	-.02237	2157.41990	.00027
22	2.82320	1.83584	-5.00203	-.03908	10172.00460	.00128
23	2.41713	1.69243	4.02184	.03081	7424.00638	.00094
24	5.21547	1.69012	-16.58725	-.16118	159351.20970	.02011
25	3.93094	1.59750	6.08070	.06787	25538.82281	.00322
26	2.49724	1.57763	-3.22934	-.03127	4283.98246	.00054
27	4.48343	2.11209	-.52028	-.00768	7453.26940	.00094
28	3.00552	1.72483	-3.99435	-.04887	29029.29218	.00366
29	5.73757	1.28928	8.10781	.05962	18365.50321	.00131
30	3.30663	1.73681	2.98504	.03349	5257.61418	.00066
31	3.79834	1.78904	-7.99422	-.08918	38373.94817	.00483
32	3.63260	1.74093	3.23828	.02760	2203.17870	.00028
33	3.71271	1.71527	4.20837	.04246	4789.23172	.00060
34	4.15061	1.86218	1.55574	.02066	7312.53485	.00092
35	4.95028	1.63679	1.37712	.01356	1999.09570	.00025
36	3.15193	1.84634	.66717	.00878	1292.19619	.00016
37	2.74586	1.66487	.74981	.00887	1393.48350	.00018
38	4.78453	1.83623	-9.47148	-.09116	71167.29748	.00898
39	5.24586	1.66196	-10.31673	-.09232	41413.89291	.00923
40	3.83978	1.76195	4.14841	.03990	6200.32404	.00078
41	4.17956	1.80591	-8.76598	-.08735	39456.43017	.00498
42	2.96409	1.79452	-3.06731	-.02898	9143.85942	.00115
43	2.87569	1.73397	-.83666	-.00819	354.83692	.00004
44	4.95304	1.83548	1.06049	.01239	820.75870	.00010
45	309.01934	148.16193				

APPENDIX J2

REGRESSION OF 6 CUSTOMER VARIABLES ABOUT THEIR INDEX OF INCONGRUITY

SAMPLE SIZE 362
 NO. OF VARIABLES 7
 DEPENDENT VARIABLE IS NOW NO. 45

COEFFICIENT OF DETERMINATION .2690
 MULTIPLE CORR. COEFFICIENT .5187

SUM OF SQUARES ATTRIBUTABLE TO REGRESSION 2131787.68803
 SUM OF SQUARES OF DEVIATION FROM REGRESSION 5792869.17661

VARIANCE OF ESTIMATE 16317.94134
 STD. ERROR OF ESTIMATE 127.74170

INTERCEPT (A VALUE) 429.60011

ANALYSIS OF VARIANCE FOR THE MULTIPLE
LINEAR REGRESSION

SOURCE OF VARIATION	D.F.	SUM OF SQUARES	MEAN SQUARES	F VALUE
DUE TO REGRESSION.....	6	2131787.68803	355297.94800	21.7735
DEVIATION ABOUT REGRESSION.....	355	5792869.17661	16317.94134	
TOTAL.....	361	7924656.86464		

VARIABLE NO.	MEAN	STD. DEVIATION	REG COEFF.	PARTIAL CORR. COEF.	SUM OF SQ. ADDED	PROP. VAR. CUM.
6	2.39503	1.71074	10.88089	.12967	861327.21721	.10869
7	5.26519	1.55646	-12.58357	-.13333	543737.37256	.06861
13	2.80387	1.73531	10.28452	.12618	248320.77705	.03134
18	3.25691	1.75911	8.47796	.10140	156055.89108	.01969
24	5.21547	1.69012	-14.08016	-.15182	217002.90297	.02738
39	5.24586	1.66196	-12.08565	-.13364	105343.52716	.01329
45	309.01934	148.16193				

APPENDIX J3

REGRESSION OF 44 STEEL SERVICE CENTER VARIABLES ABOUT THEIR INDEX OF INCONGRUITY

SAMPLE SIZE 436
 NO. OF VARIABLES 45
 DEPENDENT VARIABLE IS NOW NO. 45

COEFFICIENT OF DETERMINATION .4906
 MULTIPLE CORR. COEFFICIENT .7005

SUM OF SQUARES ATTRIBUTABLE TO REGRESSION 5208844.95842
 SUM OF SQUARES OF DEVIATION FROM REGRESSION 5407379.35350

VARIANCE OF ESTIMATE 13829.61471
 STD. ERROR OF ESTIMATE 117.59938

INTERCEPT (A VALUE) 438.83402

ANALYSIS OF VARIANCE FOR THE MULTIPLE
LINEAR REGRESSION

SOURCE OF VARIATION	D.F.	SUM OF SQUARES	MEAN SQUARES	F VALUE
DUE TO REGRESSION.....	44	5208844.95842	118382.83996	8.5601
DEVIATION ABOUT REGRESSION.....	391	5407379.35350	13829.61471	
TOTAL.....	435	10616224.31193		

VARIABLE NO.	MEAN	STD. DEVIATION	REG. COEFF.	PARTIAL CORR. COE.	SUM OF SQ. ADDED	PROP. VAR. CUM.
1	4.42890	2.02217	4.23113	.06053	104021.13981	.00980
2	1.90826	1.51493	-.24399	-.00301	131593.43413	.01240
3	3.38073	1.86239	-5.30128	-.07606	80568.95000	.00759
4	2.33486	1.80492	.35212	.00474	740333.16804	.06974
5	3.81192	2.44788	-4.87419	-.08499	133101.23800	.01254
6	2.44266	1.74169	9.70046	.12313	960201.03367	.09045
7	4.97018	1.80715	-2.01933	-.02608	301560.53770	.02841
8	5.14908	1.82908	-6.47300	-.09294	61891.51821	.00583
9	3.20183	1.97353	1.42109	.01984	246496.01873	.02322
10	4.16972	2.19165	-2.28602	-.04175	13806.80684	.00130
11	2.78670	2.03598	8.17561	.10984	204019.41149	.01922
12	4.70872	2.14423	-2.72826	-.04373	121875.94050	.01148
13	2.48165	1.78554	2.11172	.02790	177786.09533	.01675
14	4.02064	1.84629	-1.49991	-.02355	11020.12827	.00104
15	3.32339	2.14926	3.94454	.06763	8633.04027	.00081
16	5.53670	1.79425	.26209	.00331	26835.51159	.00253
17	3.74083	2.21786	-3.47818	-.05687	27742.52744	.00261
18	3.76376	1.89413	4.74982	.06647	198018.64241	.01865
19	5.82110	1.41912	-4.83115	-.05487	90613.29688	.00854
20	5.39908	1.58771	-6.46711	-.07851	139353.43962	.01313
21	3.08257	1.66162	3.25443	.04376	39232.32161	.00370
22	2.81651	1.81141	13.91918	.12595	665640.72371	.06270
23	2.33486	1.63799	4.01077	.03437	5958.50004	.00056
24	5.07798	1.71226	-12.94695	-.14604	177551.85745	.01672
25	3.11468	1.54939	4.66017	.05754	19789.76937	.00186
26	2.10780	1.50702	-2.53310	-.02647	3262.76351	.00031
27	4.03440	2.22136	-2.72010	-.04963	14618.82207	.00138
28	2.86009	1.80196	1.51668	.02192	1366.47610	.00013
29	6.14908	1.07565	.99580	.00792	274.99474	.00003
30	2.82110	1.75384	2.77902	.03461	4945.94260	.00047
31	3.86239	2.12470	-1.44285	-.02423	39092.19887	.00368
32	3.60321	2.01549	-2.82159	-.03290	67437.47410	.00635
33	3.46330	1.91930	-4.63381	-.05664	35697.13413	.00336
34	3.59404	1.85146	2.04878	.02921	9106.30328	.00086
35	5.54587	1.48563	.00229	.00003	16678.91954	.00157
36	3.91284	1.90141	-9.28326	-.12496	152529.05995	.01437
37	1.98165	1.36782	.79855	.00832	1923.92443	.00018
38	5.04817	1.81310	4.92359	.05561	1258.27169	.00012
39	5.34174	1.74335	-10.20829	-.11601	85045.60336	.00801
40	3.54587	1.83584	-2.77775	-.02768	6827.45753	.00064
41	3.80963	1.83654	6.69163	.06500	35721.29384	.00336
42	3.20872	1.90704	5.18067	.04932	36451.50764	.00343
43	2.99083	1.86188	1.70169	.01703	879.51430	.00008
44	5.43119	1.50931	3.57752	.03863	8082.24564	.00076
45	339.62385	156.22136				

APPENDIX J4

REGRESSION OF 7 STEEL SERVICE CENTER VARIABLES ABOUT THEIR INDEX OF INCONGRUITY

SAMPLE SIZE 436
 NO. OF VARIABLES 8
 DEPENDENT VARIABLE IS NOW NO. 45

COEFFICIENT OF DETERMINATION .4300
 MULTIPLE CORR. COEFFICIENT .6558

SUM OF SQUARES ATTRIBUTABLE TO REGRESSION 4565332.54482
 SUM OF SQUARES OF DEVIATION FROM REGRESSION 6050891.76710

VARIANCE OF ESTIMATE 14137.59759
 STD. ERROR OF ESTIMATE 118.90163

INTERCEPT (A VALUE) 442.25816

ANALYSIS OF VARIANCE FOR THE MULTIPLE
LINEAR REGRESSION

SOURCE OF VARIATION	D.F.	SUM OF SQUARES	MEAN SQUARES	F VALUE
DUE TO REGRESSION.....	7	4565332.54482	652190.36355	46.1316
DEVIATION ABOUT REGRESSION.....	428	6050891.76710	14137.59759	
TOTAL.....	435	10616224.31193		

VARIABLE NO.	MEAN	STD. DEVIATION	REG. COEFF.	PARTIAL CORR. COE.	SUM OF SQ. ADDED	PROP. VAR. CUM
6	2.44266	1.74169	15.26067	.19840	1655677.68257	.15596
11	2.78670	2.03598	13.81678	.22866	581728.22007	.05480
20	5.39908	1.58771	-10.41651	-.13100	453860.18677	.04275
22	2.81651	1.81141	20.34283	.24326	1246920.09022	.11689
24	5.07798	1.71226	-14.79953	-.17437	241847.66416	.02278
36	3.91284	1.90141	-9.20999	-.12931	245445.89859	.02312
39	5.34174	1.74335	-12.78262	-.15342	145852.80244	.01374
45	339.62385	156.22136				

APPENDIX J5

REGRESSION OF 44 BASIC MILL VARIABLES ABOUT THEIR INDEX OF INCONGRUITY

SAMPLE SIZE 89
 NO. OF VARIABLES 45
 DEPENDENT VARIABLE IS NOW NO. 45
 COEFFICIENT OF DETERMINATION .6481
 MULTIPLE CORR. COEFFICIENT .8051
 SUM OF SQUARES ATTRIBUTABLE TO REGRESSION 1040543.57631
 SUM OF SQUARES OF DEVIATION FROM REGRESSION 564924.06414
 VARIANCE OF ESTIMATE 12839.18328
 STD. ERROR OF ESTIMATE 113.31012
 INTERCEPT (A VALUE) -11.03893

ANALYSIS OF VARIANCE FOR THE MULTIPLE									
SOURCE OF VARIATION		LINEAR	REGRESSION	SUM OF	MEAN	F			
		D.F.	SQUARES	SQUARES	VALUE	1.8419			
DUE TO REGRESSION.....		44	1040543.57631	23648.71764					
DEVIATION ABOUT REGRESSION....		44	564924.06414	12839.18328					
TOTAL...		88	1605467.64045						

VARIABLE NO.	MEAN	STD. DEVIATION	REG. COEFF.	PARTIAL CORR. COE.	SUM OF SQ. ADDED	PROP. VAR. CUM.
1	4.83146	1.39183	2.85500	.02478	731.57006	.00046
2	2.51685	1.68626	5.64885	.07136	47816.28643	.00978
3	4.40449	1.2871	1.96108	.02441	61.92822	.0004
4	2.60674	1.54197	22.16140	.25388	123474.02178	.07691
5	4.42697	1.86606	-14.57529	-18398	26144.72866	.01624
6	2.60674	1.52716	19.46230	.20988	163706.45389	.1143
7	4.98876	1.57750	5.42915	.05938	135.05120	.0008
8	4.62921	1.61232	19.32453	.23836	75916.80881	.04729
9	3.50562	1.81611	-28.10521	-.28147	50.47380	.00003
10	4.73034	1.78226	-3.05114	-.04126	3.93761	.00000
11	2.91011	1.58409	3.19528	.03473	1501.9407	.00094
12	4.93258	1.76325	-2.87574	-.03458	8675.53460	.00540
13	3.12360	1.62942	29.79611	.33105	79408.95627	.04946
14	2.51685	1.58751	-16.71032	-.17998	23962.96565	.01493
15	3.42168	1.67272	-2.56900	-.03619	388.43322	.00241
16	5.59551	1.24672	20.56027	.16901	23377.65622	.01452
17	4.58427	1.67745	11.44578	.13225	75.77454	.00005
18	4.47191	1.47008	-2.23747	-.02224	23890.38820	.01488
19	4.63921	1.04861	-6.78803	-.06803	2757.29801	.00172
20	5.16854	1.38764	-19.26626	-.19108	203.47776	.00013
21	3.10112	1.44635	-4.14554	-.04310	6563.59847	.00408
22	4.88193	1.36340	7.78237	.05794	7759.50501	.00488
23	4.45733	1.5825	21.86978	.21960	20391.9264	.01270
24	2.69666	1.25918	-10.22897	-.07858	41132.59145	.02259
25	3.39326	1.48949	40.51806	.37003	422551.64711	.02632
26	4.77528	1.77966	-18.08736	-.18667	23089.23352	.01436
27	4.84270	1.74581	-2.98819	-.02129	983.9124	.00063
28	3.33708	1.58074	-18.45536	-.18295	33069.09166	.01190
29	5.64045	1.14065	-5.57129	-.00688	5912.81095	.00368
30	3.75288	1.62565	-19.14467	-.19857	51166.71155	.01372
31	4.57303	1.77528	13.5825	.08992	4411.9124	.00493
32	2.5843	1.51553	17.43793	.18969	4113.7124	.00236
33	3.83146	1.61110	11.94824	.11264	1156.71169	.00072
34	6.1798	1.75336	19.86785	.23602	56442.42269	.03514
35	4.57303	1.5825	21.86978	.21960	20391.9264	.01270
36	1.01112	1.22259	-16.45639	-.17198	5156.99667	.00211
37	2.40449	1.26777	-13.57209	-.13699	2175.16647	.00136
38	4.22474	1.64974	3.99909	.03602	61949.59995	.01209
39	4.84270	1.74581	18.08736	.18667	23089.23352	.01436
40	3.98876	1.62624	-8.795146	-.06338	714.43389	.00048
41	4.36831	1.43892	11.45333	.10087	10712.86880	.00667
42	3.70787	1.78505	36.98583	.36985	49577.61095	.03088
43	5.5185	1.75174	-1.74862	-.01748	1213.3482	.00092
44	4.96629	1.36889	6.72775	.06664	2370.02663	.00148
45	333.12360	135.07017				

APPENDIX J6

REGRESSION OF 7 BASIC MILL VARIABLES ABOUT THEIR INDEX OF INCONGRUITY

SAMPLE SIZE 89
 NO. OF VARIABLES 8
 DEPENDENT VARIABLE IS NOW NO. 45

COEFFICIENT OF DETERMINATION .4368
 MULTIPLE COOR. COEFFICIENT .6609

SUM OF SQUARES ATTRIBUTABLE TO REGRESSION 701249.67943
 SUM OF SQUARES OF DEVIATION FROM REGRESSION 904217.96102

VARIANCE OF ESTIMATE 11163.18470
 STD. ERROR OF ESTIMATE 105.65597

INTERCEPT (A VALUE) 77.51742

ANALYSIS OF VARIANCE FOR THE MULTIPLE
LINEAR REGRESSION

SOURCE OF VARIATION	D.F.	SUM OF SQUARES	MEAN SQUARES	F VALUE
DUE TO REGRESSION.....	7	701249.67943	100178.52563	8.9740
DEVIATION ABOUT REGRESSION.....	81	904217.96102	11163.18470	
TOTAL.....	88	1605467.64045		

VARIABLE NO.	MEAN	STD. DEVIATION	REG. COEFF.	PARTIAL CORR. COE.	SUM OF SQ. ADDED	PROP. VAR. CUM.
8	4.62921	1.61232	8.54245	.12729	87424.08569	.05445
13	3.12360	1.82942	19.62601	.26012	266248.17578	.16584
14	3.51685	1.56751	-18.27820	-.26042	29200.75594	.01819
23	2.41573	1.35520	17.34153	.19530	57543.72460	.03584
25	3.39326	1.48949	17.35460	.23018	81244.66273	.05060
34	3.61798	1.73536	10.04573	.15909	62604.43563	.03899
42	3.70787	1.78505	22.09171	.33846	116983.83907	.07287
45	333.12360	135.07017				

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