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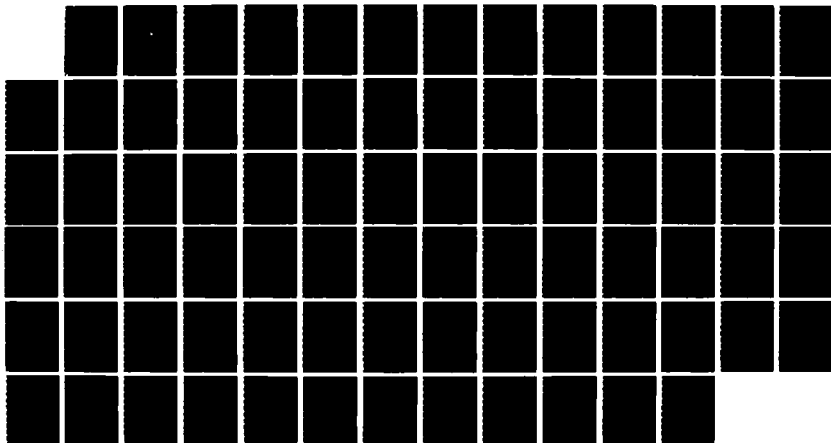
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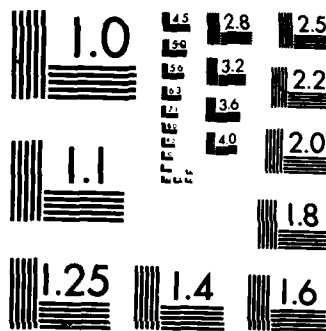
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FINANCIAL MANAGER INNOVATIONS:
THE MEASUREMENT OF MANAGER TRAITS

by

Roy Michael Smith

June 1986

Thesis Advisor: J. W. Creighton

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Financial Manager Innovations:
The Measurement of Manager Traits

by

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Lieutenant Commander, United States Navy
B.B.A. University of Texas at Arlington, 1971

Submitted in partial fulfillment of the
requirement for the degree of

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ABSTRACT

It is hypothesized that there is a direct relationship between Naval officer financial managers and the linker methodology of information transfer. The Professional Preference Census (PPC), a previously developed questionnaire, is used to determine the placement of Navy financial managers along the linker-stabilizer spectrum. A linker and stabilizer type of performance is defined and the methodology for measuring performance from the PPC is explained. Results obtained from the PPC are used in the formation of a working checklist for use in the field of financial management within the Navy. Emphasis is placed on the identification of personality traits that should prove helpful in the field of financial management.



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I. INTRODUCTION

The role of Navy financial managers includes budgeting, accounting, disbursing, reporting, internal review, and to either receive or provide general financial guidance, advice or reports. Navy comptrollers operate in a staff capacity, recommending to management but not actually making management decisions. In this role the financial manager is deeply involved in the transfer of information. This places the the financial manager squarely within the realm of having linker responsibilities. In broad terms, linker methodology includes a mechanism which links or couples the source of knowledge with the eventual user of that knowledge.

Information transfer can, of course, be accomplished through any number of means such as oral dissemination, written dissemination, books, magazines, formal or informal documentation. However, researchers have established rather firmly the concept that information passed by individuals through personal contact is of primary importance. The people aspect of information transfer, in this case represented by the financial manager, therefore clearly offers an area of study of vast potential. The particular area to be studied in this work attempts to identify individuals with behavioral characteristics which will help link the supplier and user of information. The first

objective is to place those Naval officers in the field of Navy financial management into the linker model. The second objective is to characterize those individuals within the sample who assume a linking position between the source of information and its supply. The final objective is the creation of a legitimate working aid for use in the field of financial management.

II. BACKGROUND

The linker model itself was developed by Professors Jolly and Creighton and LTJG S. A. Denning. The field of study of these particular individuals was the field of technology transfer. The model has previously been utilized for studies within the technological areas at the Naval Facilities Engineering Command and the Civil Engineering Laboratory. These studies investigated characteristics of the model within these distinct communities. The focus of this work will be to utilize the model to study the characteristics of another distinct community, U. S. Navy financial managers. .

But, does Linker concept apply to the financial manager? The answer is an absolute yes. The linker model is a model of information transfer. It deals specifically and directly with the transfer of information and that information certainly need not be limited to a particular field. The Navy financial manager is an advisor, he recommends prescribed courses of action. What better potential linking agent could there be than an individual filling a role of this nature? The very term linker implies a third party between the source of knowledge and the user of knowledge. The role of the Navy financial manager ascribes well to this third party role.

But what does the linker model consist of and how does it work? Figure 1 shows a simplified view of the linking mechanism.

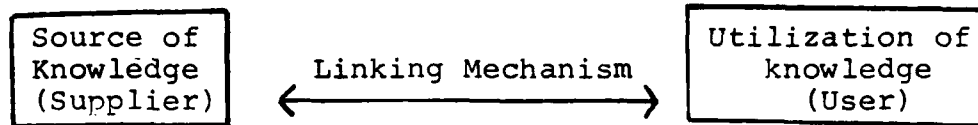


FIGURE 1.

Essoglou [Ref. 1]. speaks of the model in a technology transfer context, but the transfer of information works the same way. He says there is a source, a transfer mechanism of some sort, and utilization of the knowledge. For the model to operate successfully, the source must emit a signal which the user then receives and responds to. The key element making this transfer of information take place is the transfer mechanism. This mechanism is much more than a simplified communication channel. It can be described as a complex mechanism which involves the interaction of people which can be incorporated into either the supplier or the user environment. This linking mechanism could consist of any of a number of mediums but we shall concentrate on the person-to-person aspect. Jolly [Ref. 2] has broken down the elements that make up the linking mechanism into formal and informal factors. Figure 2 displays these factors as the information linker model.

FORMAL FACTORS

Method of Information Documentation	DOCU
The Distribution System	DIST
The Formal Organization	ORGA
Selection Process for Projects	PROJ

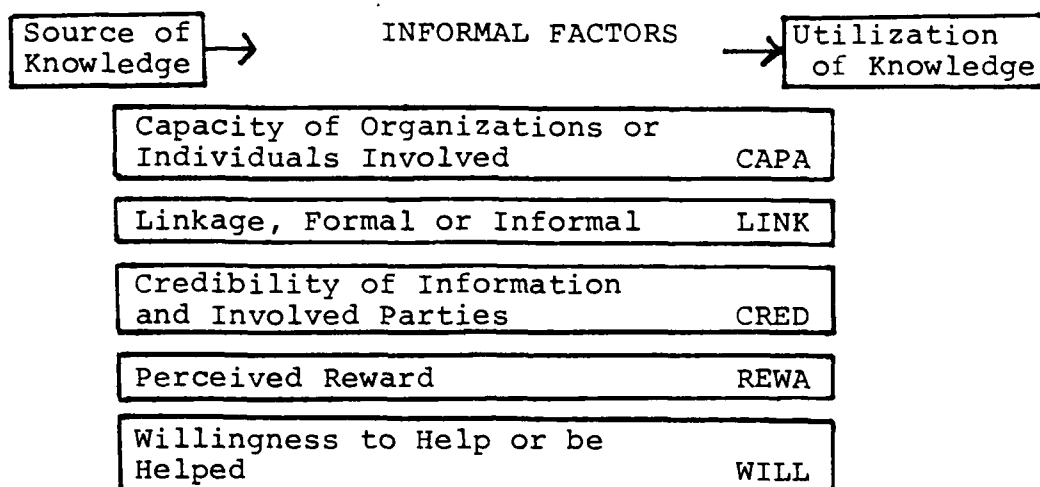


FIGURE 2.

DOCUMENTATION represents the format, organization and language used to describe information. The receiver must be able to comprehend the format and the language.

DISTRIBUTION is the physical channel used to distribute the information. This basically involves the ease of entry and exit, the plan and redundancy.

ORGANIZATION refers to the formal organization. It includes such areas as the nature of the business, management style, attitudes and tendencies.

PROJECT SELECTION refers to the selection process for research and development projects. It is critical in the ultimate utilization of research.

CAPACITY refers to a whole spectrum of traits which entail the ability to assemble, invest in, and use resources.

LINKER is the term Creighton and Jolly use for the individual or element that links the source and the user. It is a most important factor and the one this study will concentrate on.

CREDIBILITY is basically an assessment of the reliability of the information and the involved individuals. If the information received is not credible, or the people involved are not mutually credible, linkage may fail.

REWARD refers to the possible consequences from an action. If positive reward is outweighed by negative, then the transfer will probably not take place.

WILLINGNESS is the ability to help or be helped and the ability to receive a message and be willing to implement it. It pertains to the individual's ability to accept change in the organization.

This study is primarily concerned with linking, but the financial manager should understand that in effecting information linkage, all the factors are important. The factor of the model we will deal with the most extensively is the linker. There are several reasons for this choice. First of all, there are four formal factors and five informal factors that make up the transfer mechanism. The transfer

mechanism is in turn but one of the three major components of the model. To attempt to do an in-depth study of each of these areas of the model would be well beyond the scope of this study. Second, as previously mentioned, the intention of this work is to focus on the people aspect of information transfer. The linker element in turn is the element of the model that focuses most directly on people. Finally, the job requirements of the Navy financial manager come as close to approximating a linker type job as any other. The financial manager is the transfer mechanism between the sources of information and the users of information. The fact that the financial manager links does not in any way suggest, however, that the individuals in these jobs are linker type individuals. We will attempt to determine where on the scale these individuals belong after describing linker and linker alternative characteristics.

The LINKER is an individual who links the source and user of information. The linker can be associated with the source organization, the user organization or somewhere in between. Creighton says that the linker's function is to inject the user's needs into the selection system of projects and to transform the results into useful information to the user. In order to perform this function, the linker must possess certain characteristics relating to personal and interpersonal relationships. [Ref. 3] Following are some of these characteristics:

- innovative
- willing to accept risks
- active in multi-disciplines
- has more information contacts
- high credibility with peers
- composite traits
- oriented toward outside information sources
- interjects user needs into project selection
- adapts research output into useful products

The thrust of this study involves the linker, his characteristics and identification. However, another term on the linker scale must be defined at least cosmetically to meet the purposes of this study. The stabilizer is the individual who performs at the opposite pole from the linker. An in-depth description of a stabilizer will not be given, but the following characteristics are suggested:

- conservative
- disciplined
- predictable
- non-creative
- not a joiner
- relies on analysis
- relates best with others within own specialized field

Another concept closely aligned with the linker is that of the GATEKEEPER. Havelock [Ref. 4] defines the gatekeeper

as one "who holds the strategic position", in terms of the flow of knowledge from source to application. Havelock's definition of the gatekeeper actually lends itself more toward stabilizer traits than linker. The financial manager undoubtedly takes stabilizer positions on particular issues. But there can be little argument that the financial manager is in a gatekeeper position. His position affords him a tremendous opportunity to link and to aid in appropriate innovation.

The OPINION LEADER is also a concept closely aligned with the linker. Rogers and Shoemaker [Ref. 5: p. 35] define the opinion leader as an individual from whom others seek information and advice. He is an informal type of leader who has the ability to influence other people's attitudes. For the purposes of this study, the linker, opinion leader, and gatekeeper will be synonymous.

III. METHODOLOGY

The principal source of data for this work was a questionnaire. The form used was entitled the Professional Preference Census (PPC). It is a self-designating questionnaire. Developed by Creighton, Jolly and Denning, it was based on extensive research of literature which examined the characteristics and qualities of the opinion leader, gatekeeper or linker. It contains eighteen multiple choice questions which offer a continuum of possible responses. A major source of information used by the authors in the development of the questions was the Diffusion Documents Center at Michigan State University. Generalizations combined with additional research on the characteristics of the linker are the basis for each question in the PPC.

The Professional Preference Census in its entirety is contained in Appendix A. The scoring of the PPC is based on a 5-4-3-2-1 point scoring format with linker qualities being associated with the high scores and stabilizer qualities with the low. The individual question scoring format is contained in Appendix B. One hundred twenty six questionnaires were mailed out and eighty seven were returned. Histograms of question results are contained in Appendixes C through T.

When reviewing the individual questions in the survey, it should be kept in mind that no individual question is an indicator of linker or stabilizer qualities. Strong linkers may answer individual questions the same way a strong stabilizer would. Only the composite of all eighteen answers can be utilized to discriminate.

The first question in the PPC is, "Assuming that you were to make the Navy a career, what would be the highest rank to which you would aspire?" This question obviously probes the aspirations and career goals of the Navy financial manager. The higher score correleates with the highest possible rank attainable. This scoring is based upon the premise that linkers, or early adapters as they have been called by some researchers, have higher aspirations than others. Rogers and Shoemaker, Bell and others substantiate this premise. These findings support the contention that a high score on Question One would indicate a linker characteristic.

Question Two is, "Indicate the type of information upon which you would place highest credibility". Personal knowledge appears to be the key to the linker concerning this question. Researchers agreed that the opinion leader placed more reliance on information personally obtained than on that obtained from others. The linker was found to place the highest credibility in information personally obtained

by way of word of mouth. The linker not only obtains a great deal of his information via verbal communication, but he also transmits a large quantity of it by this means. Question Two is therefore scored in a manner which places the highest value on personally obtained information.

Question Three is, "Indicate which combination of words, when placed in the following sentence, would most accurately describe you: I feel that I hear about new work-related developments in my professional area ____ most of my colleagues". This question is seeking the time required for an individual to acquire and grasp new concepts in his area of work. Lewin [Ref. 6] contends that one of the functions of the gatekeeper is that he would hear of new things prior to the receivers for whom he acts as a gate. This question correlates the highest point value with the earlier reception of information.

Question Four is, "In the past year, how many non-routine work-related projects have been completed for which you supplied the original idea?". This question is designed to measure the innovativeness of the respondent. It is a direct measurement of a characteristic already attributed to the linker. The linker will score high on this question, demonstrating a high degree of innovation while the non-linker will score lower.

Question Five is, "Indicate the number of technical and/or scientific society meetings and/or conventions which you attended last year which involved personnel other than your immediate circle of colleagues". This question is concerned with how cosmopolitan the respondent is. Rogers and Shoemaker [Ref. 5: p. 378] state that the cosmopolite is more oriented toward that which is common to all the world or conversely that which is greater than the limited local environment, and that opinion leaders are more cosmopolitan than their followers. This characteristic ties in with Question Two. The cosmopolite is, according to Farr [Ref. 7], more likely to attend conventions, belong to special organizations and maintain personal contacts with individuals outside their own group. These contacts will result in the personalized oral information addressed in Question Two. The linker is therefore described as cosmopolitan, correlating high scores on Question Five with this characteristic.

Question Six is, "When you are on the job, do you most prefer work that is . . ." The responses basically involved task orientation. This question revolves around the individual's desire for excellence and personal accomplishment. Research has indicated that higher performers almost always have a higher need for achievement. Creighton [Ref. 8: p.18] states that research findings combined with the intuitive feelings of the researcher suggest that the

linker would be challenge rather than task-oriented. As such, the scores for the particular responses are the highest for challenging projects and the lowest for specific tasks.

Question Seven is, "In the past month, how many times have you sought further information about a new idea or ideas which you thought to be useful to your work?" This question seeks to determine the individual's natural desire to seek information. Rogers and Shoemaker [Ref. 5: p.189] state that early adapters seek information about innovations more than later adapters. The opinion leader also uses mass media and other sources of external information more extensively than later adapters. Research findings suggested that the linker would actively seek information to a much greater extent than would a later adapter. Question Seven therefore places higher point values on the responses that demonstrate a higher degree of searching for information.

Question Eight is a situational question whose intent is to determine an attitude toward borrowing. An engineer with a family is asked how he would finance some home improvements. The range of responses vary from making no improvements at all to borrowing the necessary funds immediately at a relatively high interest rate. This question addresses the linker characteristic of risk taking. Point totals are assessed in direct proportion to the level of risk involved. The higher the risk, the greater the point total.

Question Nine is, "Indicate the frequency with which your subordinates, peers, and/or superiors came to you in the past month for work-related information and/or advice which was not a function of your formal position." This question is related to the characteristic of information contacts. A greater than normal number of information contacts and sources has already been cited as a linker characteristic. Research in the area also indicates opinion leaders are much more receptive to information from personal sources. This question delegates the higher point totals to the answers with the greater numbers of contacts.

Question Ten is, "Indicate the total number of journals, magazines and newspapers which you regularly read." This question deals with the respondent's exposure to mass media. Research indicates that linkers, in addition to having more information contacts also have much greater exposure to mass media than do non-linkers. The range of answers delegates greater point value to the greater number of contacts.

Question Eleven is, "Indicate the number of technical, scientific, and/or professional societies to which you hold current membership." This question relates somewhat with Question Five in that it too is seeking a measure of the cosmopolitanism of the respondent. Creighton and Jolly [Ref. 8: p.34] contend that a dominant characteristic of the

opinion leader is his general orientation to things outside his own group and that membership in external societies is a viable indicator of cosmopolitanism. Point totals for this question, therefore, delegate higher points to the greater number of memberships.

Question Twelve is, "Indicate the level within the social strata to which you would aspire to be 10 years from now." This question asks the respondent to respond with his desired social status after a 10 year period. The linker is depicted to be a high achiever, or at least a high goal setter, and thus would be expected to seek a high social level. The scoring for this question thus awards higher point totals to the higher status sought.

Question Thirteen is another situational type question which asks an engineer to make a choice among several different building materials. It is another question dealing with the respondent's willingness to accept risk. Again the linker is an individual who is characterized as quite willing to accept risk so the larger point totals are associated with the riskier choices.

Question Fourteen is, "In your experience, which of the following do you tend to rely most heavily upon as a source of technical information for work-related projects and/or problems?" Research by Riley [Ref. 9] and others concluded that the opinion leaders most often got their ideas directly from colleagues. Claassen's assessment [Ref. 10: p.19] of this

question focuses on the conflict wherein the linker would tend to place high credibility on information from personal and non-personal sources and internal and external information sources. He goes on to explain this conflict through the innovation-decision process. The question delegates higher point totals to the external sources and gives less credit to personal experiences.

Question Fifteen is, "Indicate the group of people to whom you primarily relate." This question is related to the linker characteristic of activity in multiple disciplines. The linker has numerous information sources, is cosmopolitan and engages in various disciplines yet appears not to have a primary reference group. The answers award the highest point totals for no reference group and scale on down to the specialized reference group.

Question Sixteen is, "During the last month, indicate the relative frequency with which you recommended a specific item of interest, e.g. journal article, research report, or a lead to either, to a colleague which dealt with a work-related topic." This question is similar to Question Eight in that it seeks the respondent's willingness to take risks. A linker would theoretically be enthusiastic about recommending information to a colleague even though that information could conceivably damage his credibility. Higher point totals were assessed to those answers with higher degrees of risk.

Question Seventeen is another situation type question in which the respondent was asked to recommend to a friend one of five different job types. The risk level for the different jobs vary from 10% to 90% certainty of company success. This is a third question assessing the willingness of the respondent to accept risk.

Question Eighteen is "Indicate which of the following best characterizes your approach to an innovative idea." Claassen [Ref. 10: p. 20] assessed this question as one which demonstrates the venturesomeness of the respondent. He cited research which showed a venturesome individual as being one of the first to innovate. The linker is, of course, characterized as being highly innovative.

Question Nineteen is concerned with biographical data about the respondent, i. e. type of organization working for, title of billet, rank, and years in rank. This was not a graded question.

IV. DATA ANALYSIS

The number of Naval officers filling financial management billets within the Navy is very small. One hundred twenty-six questionnaires were mailed out and 87 were returned. The sample was distributed as shown in Table 1.

Only one answer to each question was permitted and the instructions requested that attitudes should be the personal attitudes of the respondent.

The rank of all respondents was compiled to provide the reader with a general relationship of the survey results to the respondent's position within the organization. The breakout is shown in Table 2. The following question by question analysis is based on the statistical output from the questionnaire.

The scoring for the PPC is shown in Appendix B. The allocation of points was determined by LTJG Denning who derived it from extensive review of literature.

TABLE 1

Questionnaire Distribution

<u>Location</u>	<u>Total Mailed</u>	<u>Total Returned</u>
OPNAV	71	42
Navy Acct & Finance Center	13	12
NAS Alameda	1	1
NAS Miramar	1	1
NAS North Island	1	1
NAS Kingsville	1	1
NAS Chase Field	1	1
NAS Corpus Christi	1	1
NAS Glenview	1	1
NAS Key West	1	1
NAS Pensacola	1	0
NAS Whiting Field	1	1
NAS Cecil Field	1	1
NAS Whidby	1	1
NAS Oceana	1	0
NAS Memphis	1	1
NAS Brunswick	1	1
NAS Moffett	1	1
NAS Lemoore	1	1
CNAVRES	4	4
COMNAVAIRPAC	2	0
NAS Lakehurst	1	0
Sub Base, New London	1	0
Charleston Naval Shipyard	1	1
COMNAVAIRLANT	4	4
COMANVAIRFOR, Norfolk	5	5
Naval Base Norfolk	1	0
NAVAIR Facility, Mayport	1	1
Brooklyn, New York	1	0
Naval Supply Center, Oakland	1	0
Naval Postgraduate School	1	1
NTC, San Diego	1	1
Naval Base, Charleston	1	1

QUESTION 1: Concerning highest rank respondent would aspire to.

- RESPONSES: (a) Lieutenant Commander
(b) Commander
(c) Captain
(d) Rear Admiral
(e) Admiral

Number	$\frac{a}{0}$	$\frac{b}{4}$	$\frac{c}{37}$	$\frac{d}{22}$	$\frac{e}{24}$	87
Percent	0	5	42	25	28	100%
PPC Points	1	2	3	4	5	

The results from Question One would be more conclusive if the rank structure of the sample was not as senior as it is. The mean rank of survey respondents as displayed in Table 2 is commander. The fact that 53% of survey respondents aspire to flag rank cannot be conclusively deemed a linker trait in this instance, since in effect the attainment of such rank would require but a two step rise above present rank.

TABLE 2

Questionnaire Respondent Rank and Percentage

<u>GRADE</u>	<u>NUMBER</u>	<u>PERCENTAGE</u>
03	6	7
04	24	28
05	36	41
06	21	24

QUESTION 2: Concerning the type of information having highest credibility.

- RESPONSES:
- (a) Personal knowledge
 - (b) Associated staff
 - (c) Vendors
 - (d) Literature
 - (e) Analysis

Number	$\frac{a}{52}$	$\frac{b}{12}$	$\frac{c}{0}$	$\frac{d}{7}$	$\frac{e}{16}$	87
Percent	60	14	0	8	18	100%
PPC Points	5	4	3	2	1	

Answers a and b for this question score the highest point totals, demonstrating the linker characteristics of personal knowledge preference in consonance with numerous information contacts. 74% of the respondents chose either answer a or answer b, demonstrating a linker tendency on this question.

QUESTION 3: Concerning the timing in which respondent hears about work related developments.

- RESPONSES:
- (a) Considerably before
 - (b) Sooner than
 - (c) About the same time as
 - (d) Later than
 - (e) Sometime after

Number	$\frac{a}{10}$	$\frac{b}{38}$	$\frac{c}{33}$	$\frac{d}{5}$	$\frac{e}{1}$	87
Percent	11	44	38	6	1	100%
PPC Score	5	4	3	2	1	

Answers d and e score the highest point totals for this question. These scores correspond with the linker's high degree of innovative tendency. Only 35% of this sample chose these answers, suggesting a lesser degree of innovation in the area concerning the supplying of the original idea for work projects.

QUESTION 4: Concerning the number of work-related projects for which the respondent supplied the original idea.

- RESPONSES: (a) 0
(b) 1-2
(c) 3-4
(d) 5-6
(e) More than above

Number	$\frac{a}{7}$	$\frac{b}{20}$	$\frac{c}{30}$	$\frac{d}{13}$	$\frac{e}{17}$	87
Percent	8	23	34	15	20	100%
PPC Points	1	2	3	4	5	

Answers d and e score the highest point totals for this question. These scores correspond with the linker's high degree of innovation. Only 35% of this sample chose these answers, suggesting a lesser degree of innovation in the area concerning the supplying of the original idea for work projects.

QUESTION 5: Concerning the number of meetings attended in the last year involving personnel other than the respondent's immediate circle of colleagues.

- RESPONSES: (a) 0
(b) 1-2
(c) 3-4
(d) 5-6
(e) More than above

Number	a 26	b 30	c 13	d 13	e 5	87
Percent	30	34	15	15	6	100%
PPC Points	1	2	3	4	5	

Answers d and e score the highest point totals for Question 5. These scores correlate with the linker characteristic of being a joiner and maintaining numerous personal contacts. The financial sample had only 21% of respondents in this group.

QUESTION 6: Concerning task oriented work preference.

- RESPONSES:
- (a) Accomplishing specific task
 - (b) Challenging but not specifically assigned task.
 - (c) Tasks individually responsible for
 - (d) Efficient utilization of resources
 - (e) None of above

Number	$\frac{a}{22}$	$\frac{b}{21}$	$\frac{c}{12}$	$\frac{d}{32}$	$\frac{e}{0}$	87
Percent	25	24	14	37	0	100%
PPC Points	2	5	3	4	1	

Answers b and d score the highest point totals for Question 6. These answers correspond with the linker characteristic of preferring work that is challenge-oriented. 61% of the financial respondents agreed with this linker characteristic.

QUESTION 7: Concerning the individual's natural desire to seek information.

- RESPONSES: (a) 0
(b) 1-2
(c) 3-4
(d) 5-6
(e) More than above

Number	$\frac{a}{2}$	$\frac{b}{22}$	$\frac{c}{28}$	$\frac{d}{12}$	$\frac{e}{23}$	87
Percent	2	25	32	14	27	100%
PPC Points	1	2	3	4	5	

Answers d and e score the highest point totals for this question. They reflect the linker tendency to enthusiastically seek new ideas and innovations. 41% of the sample respondents fell into one of these two categories.

QUESTION 8: Concerning the respondent's attitude toward borrowing.

- RESPONSES:
- (a) Borrow immediately at 18%
 - (b) Save for 6 months, then borrow at 10%
 - (c) Save for 1 year, then borrow at 7%
 - (d) Save for 2 years, then pay cash
 - (e) Make no improvements

Number	$\frac{a}{10}$	$\frac{b}{40}$	$\frac{c}{19}$	$\frac{d}{13}$	$\frac{e}{5}$	87
Percent	11	46	22	15	6	100%
PPC Points	5	4	3	2	1	

Answers a and b score the highest point totals for this question. This conforms with the linker concept of risk. The linker is a risk taker. 57% of the financial respondents displayed this linker attitude toward risk.

QUESTION 9: Concerning others seeking one out for information or advice not related to formal position.

- RESPONSES: (a) 1-3
(b) 4-9
(c) 10-15
(d) 16-20
(e) More than above

Number	$\frac{a}{21}$	$\frac{b}{27}$	$\frac{c}{18}$	$\frac{d}{8}$	$\frac{e}{13}$	87
Percent	24	31	21	9	15	100%
PPC Points	1	2	3	4	5	

Answers d and e score the highest point totals for this question. These answers relate to the linker characteristic of numerous information contacts. 24% of sample respondents chose these answers.

QUESTION 10: Concerning the total number of magazines and newspapers regularly read.

- RESPONSES:
- (a) 1-2
 - (b) 4-9
 - (c) 5-6
 - (d) 7-8
 - (e) More than above

Number	$\frac{a}{7}$	$\frac{b}{42}$	$\frac{c}{11}$	$\frac{d}{14}$	$\frac{e}{13}$	87
Percent	8	48	13	16	15	100%
PPC Points	1	2	3	4	5	

Answers d and e score the highest point totals for this question. These answers relate to the linker characteristic of having more information contacts and greater exposure to mass media. 31% of sample respondents chose one of these two answers.

QUESTION 11: Concerning the number of professional societies in which one holds membership.

- RESPONSES:
- (a) 1-2
 - (b) 3-4
 - (c) 5-6
 - (d) 7-8
 - (e) More than above

Number	$\frac{a}{66}$	$\frac{b}{17}$	$\frac{c}{0}$	$\frac{d}{3}$	$\frac{e}{1}$	87
Percent	76	20	0	3	1	100%
PPC Points	1	2	3	4	5	

Answers d and e score the highest point totals for this question. They relate to the opinion leader tendency toward cosmopolitanism and greater than average membership in external societies. 4% of sample respondents chose these answers.

QUESTION 12: Concerning the social strata one aspires to in ten years.

- RESPONSES:
- (a) Upper
 - (b) Lower-upper
 - (c) Upper-middle
 - (d) Middle
 - (e) Lower-middle

Number	$\frac{a}{23}$	$\frac{b}{25}$	$\frac{c}{38}$	$\frac{d}{1}$	$\frac{e}{0}$	87
Percent	26	29	44	1	0	100%
PPC Points	5	4	3	2	1	

Answers a and b score the highest point totals for this question. This correlates with the linker tendency toward being a high goal setter and achiever. 55% of sample respondents chose one of these answers.

QUESTION 13: Concerning the situational question of risk involving building materials.

- RESPONSES:
- (a) Recommend idea be used in firm's next major project
 - (b) Recommend material be used in small local project
 - (c) Recommend firm construct non-commercial prototype
 - (d) Recommend firm test market acceptance
 - (e) Recommend firm wait until considerable commercial application

Number	$\frac{a}{14}$	$\frac{b}{55}$	$\frac{c}{10}$	$\frac{d}{8}$	$\frac{e}{0}$	87
Percent	16	63	12	9	0	100%
PPC Points	5	4	3	2	1	

Answers a and b score the highest point totals for this question. They relate again to the linker willingness to accept risk. 79% of sample respondents chose one of these answers.

QUESTION 14: Concerning the source one relies on for technical information.

- RESPONSES:
- (a) Literature
 - (b) Vendors
 - (c) Personal experience
 - (d) Staff
 - (e) External sources

Number	$\frac{a}{26}$	$\frac{b}{4}$	$\frac{c}{15}$	$\frac{d}{35}$	$\frac{e}{7}$	87
Percent	30	5	17	40	8	100%
PPC Points	2	3	1	4	5	

Answers d and e score the highest point totals for this question. They correspond to the linker tendency to generate their ideas mostly from colleagues or external sources. 48% of sample respondents chose one of these answers.

QUESTION 15: Concerning the group one primarily relates to.

- RESPONSES:
- (a) Officers within own field
 - (b) Work-related colleagues
 - (c) Community associates
 - (d) Other than listed primary reference group
 - (e) No primary reference group

Number	a 11	b 51	c 3	d 10	e 12	87
Percent	13	59	3	11	14	100%
PPC Points	1	2	3	4	5	

Answers d and e score the highest point totals for this question. This relates to the linker characteristic of not having a specific reference group but rather relating to various disciplines. 25% of sample respondents chose one of these answers.

QUESTION 16: Concerning the frequency of recommended items of interest to colleagues.

- RESPONSES:
- (a) 0
 - (b) 1-2
 - (c) 3-4
 - (d) 5-6
 - (e) More than above

Number	$\frac{a}{9}$	$\frac{b}{40}$	$\frac{c}{23}$	$\frac{d}{7}$	$\frac{e}{8}$	87
Percent	10	46	27	8	9	100%
PPC Points	1	2	3	4	5	

Answers d and e score the highest point totals for this question. This is another question that deals with one's willingness to take risks. The linker characteristic is high risk taking. 17% of sample respondents chose one of these answers.

QUESTION 17: Concerning the probability of accepting a new job.

RESPONSES: (a) 1 in 10
(b) 3 in 10
(c) 5 in 10
(d) 7 in 10
(e) 9 in 10

	<u>a</u>	<u>b</u>	<u>c</u>	<u>d</u>	<u>e</u>	
Number	1	20	39	22	5	87
Percent	1	23	45	25	6	100%
PPC Points	5	4	3	2	1	

Answers a and b score the highest point totals for this question. They relate to the answers in which the greatest risk is assumed. 24% of sample respondents chose one of these answers.

QUESTION 18: Concerning one's approach to an innovative idea.

- RESPONSES:
- (a) Very eager
 - (b) Discreet use of
 - (c) Deliberate for some time
 - (d) Skeptical and cautious
 - (e) Prefer only proven ideas

	<u>a</u>	<u>b</u>	<u>c</u>	<u>d</u>	<u>e</u>	
Number	14	45	25	3	0	87
Percent	16	52	29	3	0	100%
PPC Points	5	4	3	2	1	

Answers a and b score the highest point totals for this question. They correspond to the linker characteristic of high innovation. 68% of sample respondents chose one of these answers.

Each of the 87 returned samples was graded with the overall results indicated in Table 3.

TABLE 3

Sample Questionnaire Raw Scores

<u>10</u>	<u>20</u>	<u>30</u>	<u>40</u>	<u>50</u>	<u>60</u>	<u>70</u>	<u>80</u>	<u>90</u>
0	0	0	12	48	24	3	0	0

Individual question results are displayed in Appendixes C through T. The mean of this 87 sample questionnaire is 56.26, the variance 48.21, and the standard deviation 6.94.

Creighton, Jolly and Denning utilized a measuring standard with the PPC dividing the trial sample into five groups on the basis of the standard deviation of the sample scores. Stabilizers, potential stabilizers, non-discriminating majority, potential linkers and linkers were broken out by sample mean and standard deviation. The non-discriminating majority is from minus one to plus one standard deviation, potential linker from plus one to plus two standard deviations, potential stabilizer from minus one to minus two standard deviations, linker from plus two standard deviations and stabilizer from minus two standard deviations. Broken down into this format, the financial managers would be arrayed as displayed in Table 4.

TABLE 4

Groups Determined by Mean and Standard Deviation

	<u>Stabilizer</u>	<u>Potential Stabilizer</u>	<u>NDM</u>	<u>Potential Linker</u>	<u>Linker</u>
Number	2	10	61	11	3

V. CONCLUSIONS AND RECOMMENDATIONS

The thrust of this work has been to take the linker model developed by Creighton, Jolly and Denning and to apply it to a specific subset of Naval officers. The Professional Preference Census is a proven yardstick for linker type characteristic measurements, and the 69% questionnaire return provided a solid sample for statistical analysis.

The results of the questionnaires are viewed by the standard deviation measurement. The designated average financial manager does not turn out to be a true linker, just as one would expect. The mean/standard deviation technique suggests the result to be a member of the non-discriminating majority. Regardless of the overall results obtained from the surveys, there were five questions answered by the respondents in a manner indicating strong linker characteristics. These questions and the characteristics displayed are shown in Table 5.

TABLE 5

STRONG LINKER CHARACTERISTIC QUESTIONS

<u>Question</u>	<u>Characteristic</u>
2	Information credibility- personal
6	Work preference - challenge oriented
12	Social Strata aspiration - high
13	Risk - willing
18	Innovation - high

The following recommendations are suggested, based on these results, for Naval officers in positions of financial management:

- A. Give the financial manager the flexibility necessary to learn his position on his own. The financial manager places much more credibility on information he has acquired in a personal endeavor. He will place much more confidence in his information types if allowed to cultivate them personally, rather than through impersonal devices.
- B. Assign the financial manager projects which are challenge oriented rather than task oriented. The financial manager relishes a challenge and enthusiastically puts his efforts into the solution of that challenge. His enthusiasm, although not necessarily his effort, wanes considerably when assigned a specific task.

- C. Expect the financial manager to be a social climber. The individual in question is a high goal setter and included in these goals is his social aspiration. He is a highly competent individual who works hard and expects to attain a high social status as a result of those efforts.
- D. Assign the financial manager the assignment that involves the most risk. The Navy financial manager is a qualified risk taker. The survey suggests he is a considerable risk taker within his field of expertise, although probably rather conservative outside of that realm.
- E. Assign the financial manager any project requiring innovation. The Naval officer in general is an innovator, and the financial manager in particular is even more so. He works best on the challenging project wherein he is left to his own devices and ingenuity to come up with a solution.

This work in no way suggests that potential linker and linker type individuals make the best Naval officer financial managers. However, it does suggest very strongly that some predominant linker characteristics are prevalent in these individuals.

The identifying traits and characteristics of the linker have been clearly identified in previous works. This work has added one more subset of Naval officers to the investigation of those traits.

APPENDIX A

Professional Preference Census

INSTRUCTIONS: Please circle the letter which most nearly describes your answer or reaction to the question.

1. Assuming that you were to make the Navy a career, what would be the highest rank to which you would aspire?
 - a) Lieutenant Commander
 - b) Commander
 - c) Captain
 - d) Rear Admiral
 - e) Admiral

2. Indicate the type of information upon which you would place highest credibility.
 - a) Personal knowledge
 - b) Associated staff
 - c) Vendors and/or trade councils
 - d) Literature - journals books, etc.
 - e) Analysis and experimentation

3. Indicate which combination of words, when placed in the following sentence, would most accurately describe you: I feel that I hear about new work-related developments in my professional area _____ most of my colleagues.
 - a) considerably before
 - b) sooner than
 - c) at about the same time as
 - d) later than
 - e) sometime after

4. In the past year, how many nonroutine, work-related projects have been completed for which you supplied the original idea?
 - a) 0
 - b) 1-2
 - c) 3-4
 - d) 5-6
 - e) More than the above.

5. Indicate the number of technical and/or scientific society meetings and/or conventions which you attended last year which involved personnel other than your immediate circle of colleagues.
 - a) 0
 - b) 1-2
 - c) 3-4
 - d) 5-6
 - e) More than the above.

6. When you are on the job, do you most prefer work that is:
- | | |
|---|--|
| a) concerned with accomplishing a specific task. | c) concerned with accomplishing those tasks for which I am individually responsible. |
| b) concerned with attempting to solve a challenging but not specifically assigned task. | d) concerned with the efficient utilization of resources. |
| | e) None of the above. |
7. In the past month, how many times have you sought further information about a new idea or ideas which you thought to be useful to your work?
- a) 0 b) 1-2 c) 3-4 d) 5-6 e) More than the above.
8. Mr. E., a civil engineer, who is married and has three children, recently decided to perform some major improvements upon his house (cost approximately \$1,000). Mr. E. realized that the improvements were not urgently required, but would make life at home more comfortable for the E. family. Consequently, Mr. E. was faced with a decision as to how he should finance the home improvements because such seemed to be the sole determinant as to when the E's could utilize these improvements. Indicate which of the following financial decisions you would advise Mr. E to make for his home improvements.
- | | |
|---|--|
| a) Borrow the necessary money immediately at 18% annual interest. | c) Save for one year & borrow the remainder at 7% annual interest. |
| b) Save for 6 months and borrow the remainder at 10% annual interest. | d) Save for two years & pay cash for the improvements if present interest rates remain the same. |
| | e) Make no improvements. |
9. Indicate the frequency with which your subordinates, peers, and/or superiors came to you in the past month for work-related information and/or advice which was not a function of your formal position.
- a) 1-3 b) 4-9 c) 10-15 d) 16-20 e) More than above.

10. Indicate the total number of journals, magazines, and newspapers which you regularly read:
a) 1-2 b) 3-4 c) 5-6 d) 7-8 e) More than above.
11. Indicate the number of technical, scientific, and/or professional societies to which you hold current membership.
a) 1-2 b) 3-4 c) 5-6 d) 7-8 e) More than above.
12. Indicate the level within the social strata to which you would aspire to be 10 years from now.
a) Upper d) Middle
b) Lower-Upper e) Lower-Middle
c) Upper-Middle
13. Mr. C., a civil engineer who is employed by a medium sized construction firm, recently learned of a new building material which is used extensively in Europe but was never adopted in the United States. The building material appears to have several advantages in terms of substantial cost reduction, superior insulation qualities, and relative ease of construction as compared to its counterpart in the United States. After a thorough investigation, Mr. C obtained extensive and reliable information on the characteristics, costs and advantages of the new material. Further, his company could easily obtain exclusive manufacturing rights for use in the U.S. Imagine that you are Mr.C. Indicate which of the following would best describe your approach to the building material:
a) Recommend that the new idea be utilized in the firm's next major building project so as to take advantage of the substantial cost savings.
b) Recommend that the building material be used in one of the firm's small, local building projects so as to test its acceptance.
c) Recommend that the firm construct a non-commercial prototype.
d) Recommend that the firm engage the services of an independent consultant firm so as to verify the information obtained and to test market acceptance.
e) Recommend that the firm wait until the building material has received considerable commercial application in the United States.

14. In your experience, which of the following do you tend to rely most heavily upon as a source of technical information for work-related projects and/or problems?
- a) Literature - books, government manuals, and professional trade and technical journals.
 - b) Vendors - representatives of, or documentation generated by suppliers or potential suppliers.
 - c) Personal experience - ideas which were previously used by yourself in similar situations and recalled directly from memory.
 - d) Staff - selected members of your staff who are not assigned directly to the project being considered.
 - d) External sources - sources which do not fall into any of the above categories.
15. Indicate the group of people to whom you primarily relate.
- a) Officers within your specialized field.
 - b) Work-related colleagues (both military and civilian).
 - c) Community associates.
 - d) I have a primary reference group but it is people other than those listed above.
 - e) I do not have a primary reference group.
16. During the last month, indicate the relative frequency with which you recommended a specific item of interest, e.g., journal article, research report, or a lead to either, to a colleague which dealt with a work-related topic.
- a) 0 b) 1-2 c) 3-4 d) 5-6 e) More than above.
17. Mr. A., a middle management executive, who is married and has one child, has been working for a corporation since graduation from college five years ago. He is assured of a lifetime job with a modest, though adequate salary, and liberal pension benefits upon retirement. On the other hand, it is very unlikely that his salary will increase much before he retires. While attending a convention, Mr. A is offered a job with a small, newly founded company which has a highly uncertain future. The new job would pay more to start and would offer the possibility of a share in the ownership if the company survived the competition of the larger firms.

Imagine that you are advising Mr. A. Listed below are several probabilities or odds of the new company's proving financially sound. Please check the lowest probability that you would consider acceptable to make it worthwhile for Mr. A to take the new job.

- a) The chances are 1 in 10 that the company will prove financially sound.
- b) The chances are 3 in 10 that the company will prove financially sound.
- c) The chances are 5 in 10 that the company will prove financially sound.
- d) The chances are 7 in 10 that the company will prove financially sound.
- e) The chances are 9 in 10 that the company will prove financially sound.

18. Indicate which of the following best characterizes your approach to an innovative idea:

- a) Very eager to adopt new ideas.
- b) Discreet use of new ideas.
- c) Deliberate for sometime before adopting a new idea.
- d) Skeptical & cautious about adopting a new idea.
- e) Prefer to only use proven ideas.

19. Biographical data.

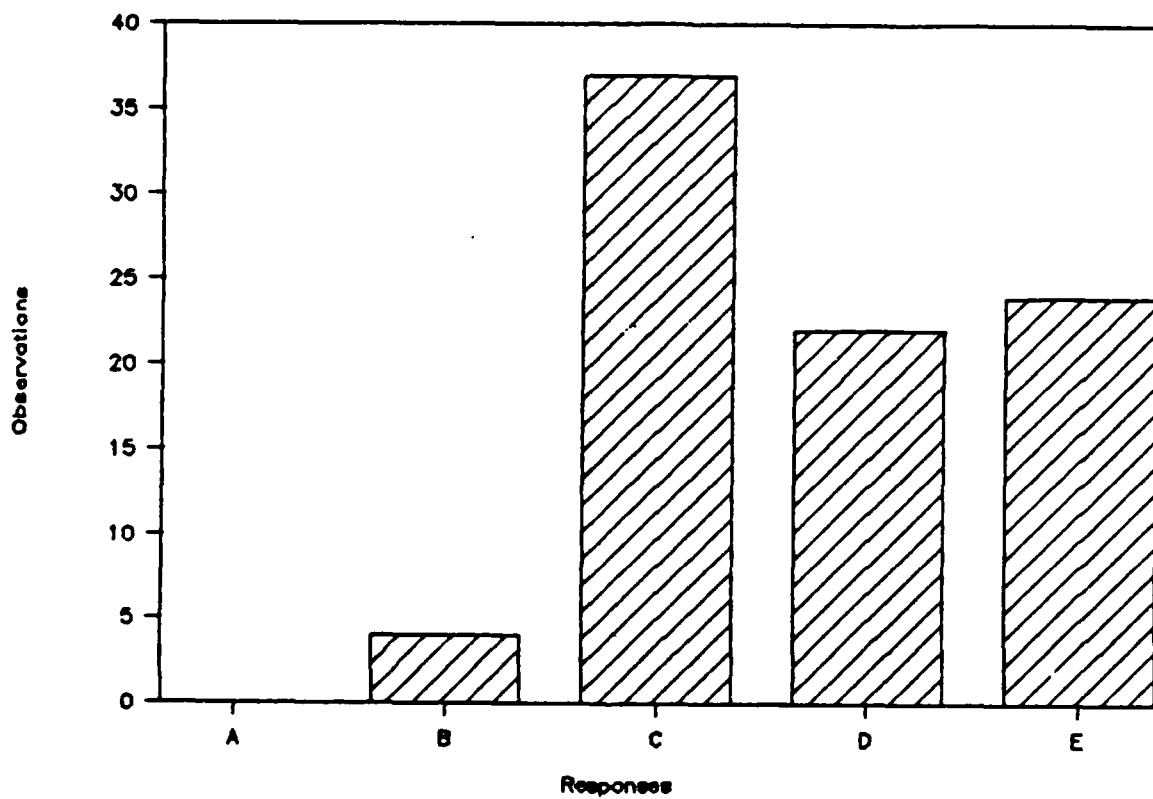
- a) Please indicate the type of organization you are working in at the time.
- b) Please indicate the title of your billet and present rank. _____
- c) How many years have you held your present rank? _____
- d) How many years did you hold your previous rank? _____

APPENDIX B

Scoring for Professional Preference Census

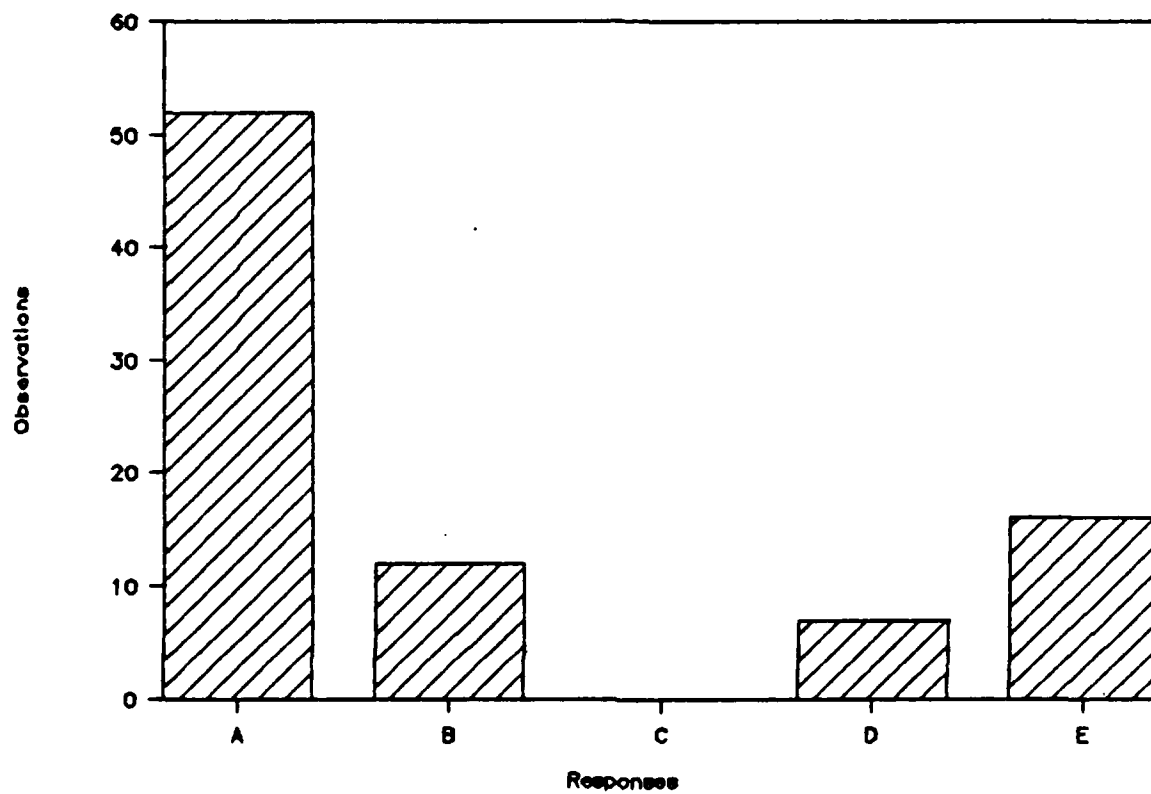
<u>Question</u>	<u>Number of Points</u>				
	<u>a</u>	<u>b</u>	<u>c</u>	<u>d</u>	<u>e</u>
1	1	2	3	4	5
2	5	4	3	2	1
3	5	4	3	2	1
4	1	2	3	4	5
5	1	2	3	4	5
6	2	5	3	4	1
7	1	2	3	4	5
8	5	4	3	2	1
9	1	2	3	4	5
10	1	2	3	4	5
11	1	2	3	4	5
12	5	4	3	2	1
13	5	4	3	2	1
14	2	3	1	4	5
15	1	2	3	4	5
16	1	2	3	4	5
17	5	4	3	2	1
18	5	4	3	2	1

APPENDIX C



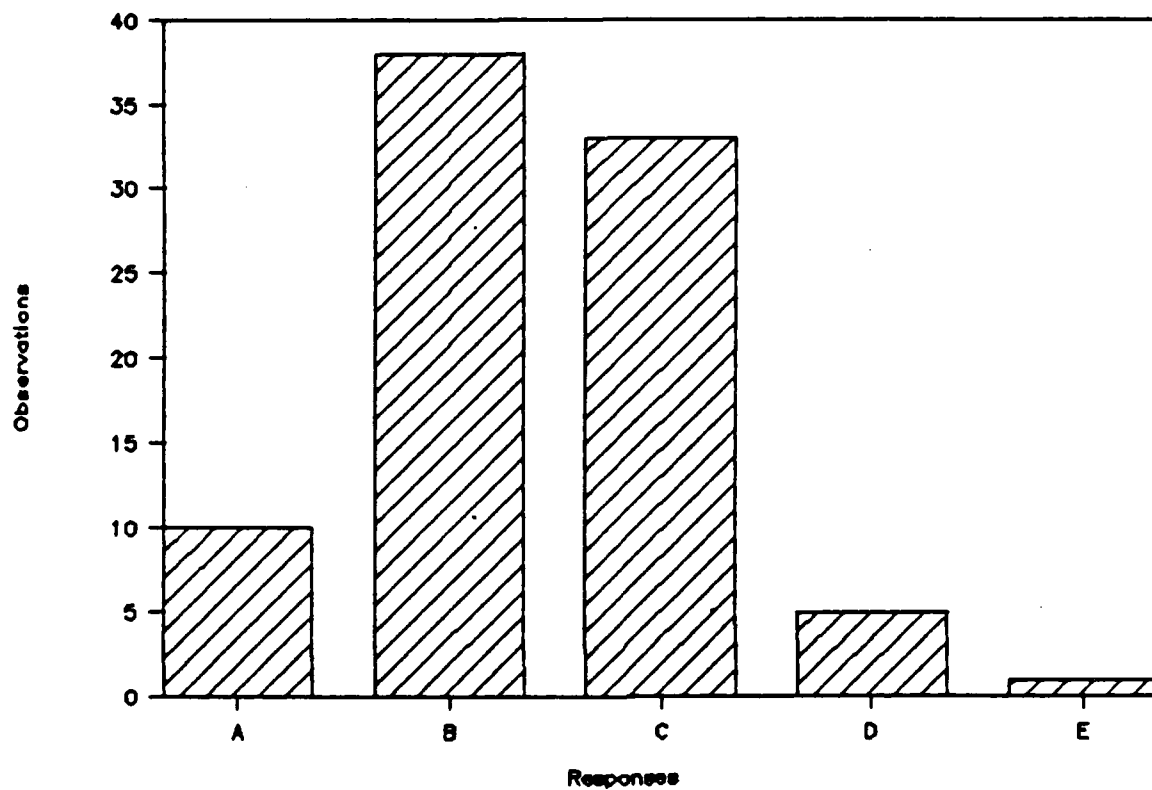
Histogram Professional Preference Questionnaire Question One

APPENDIX D



Histogram Professional Preference Questionnaire Question Two

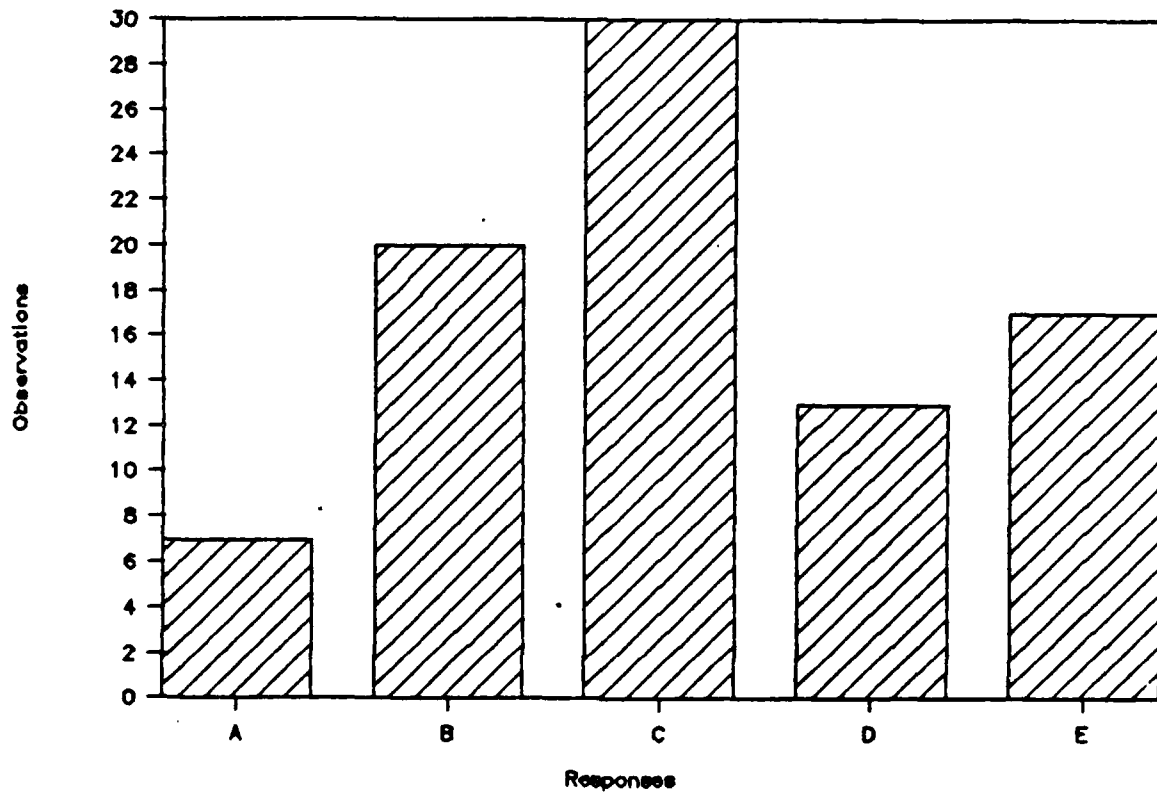
APPENDIX E



Histogram Professional Preference Questionnaire Question Three

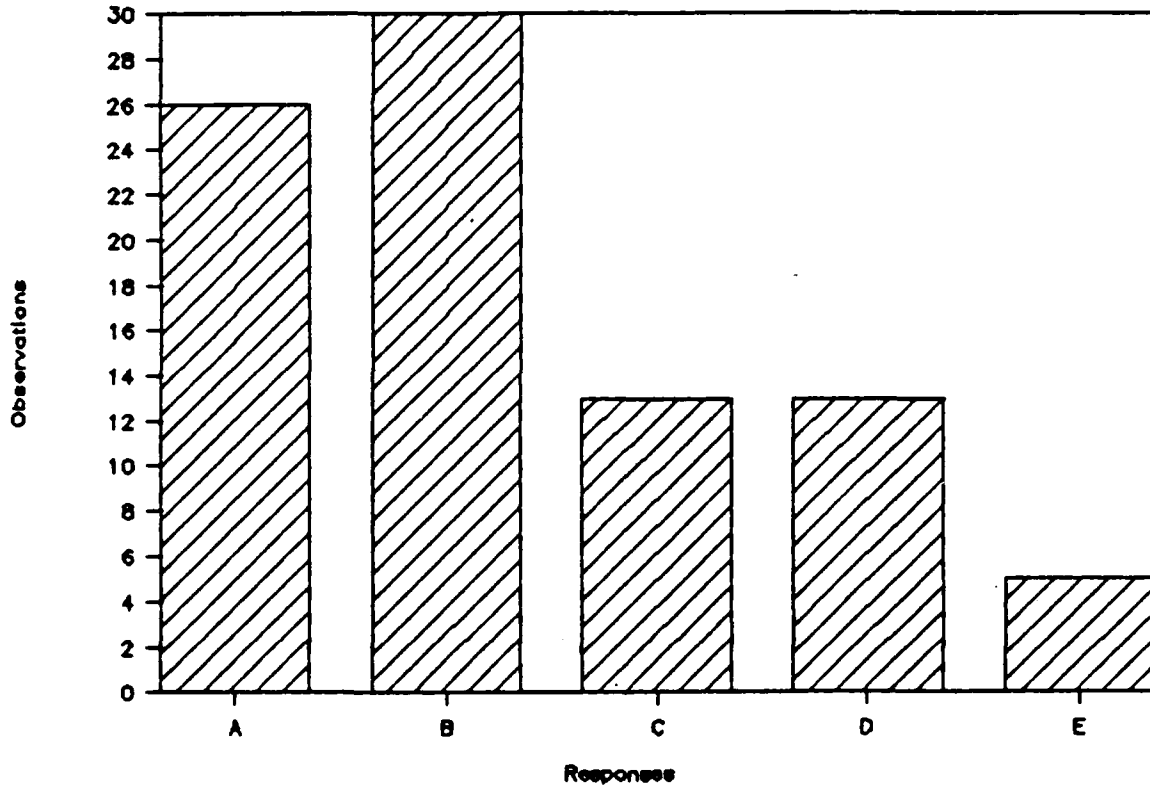
MEMORANDUM FOR GOVERNMENT EXPENSE

APPENDIX F



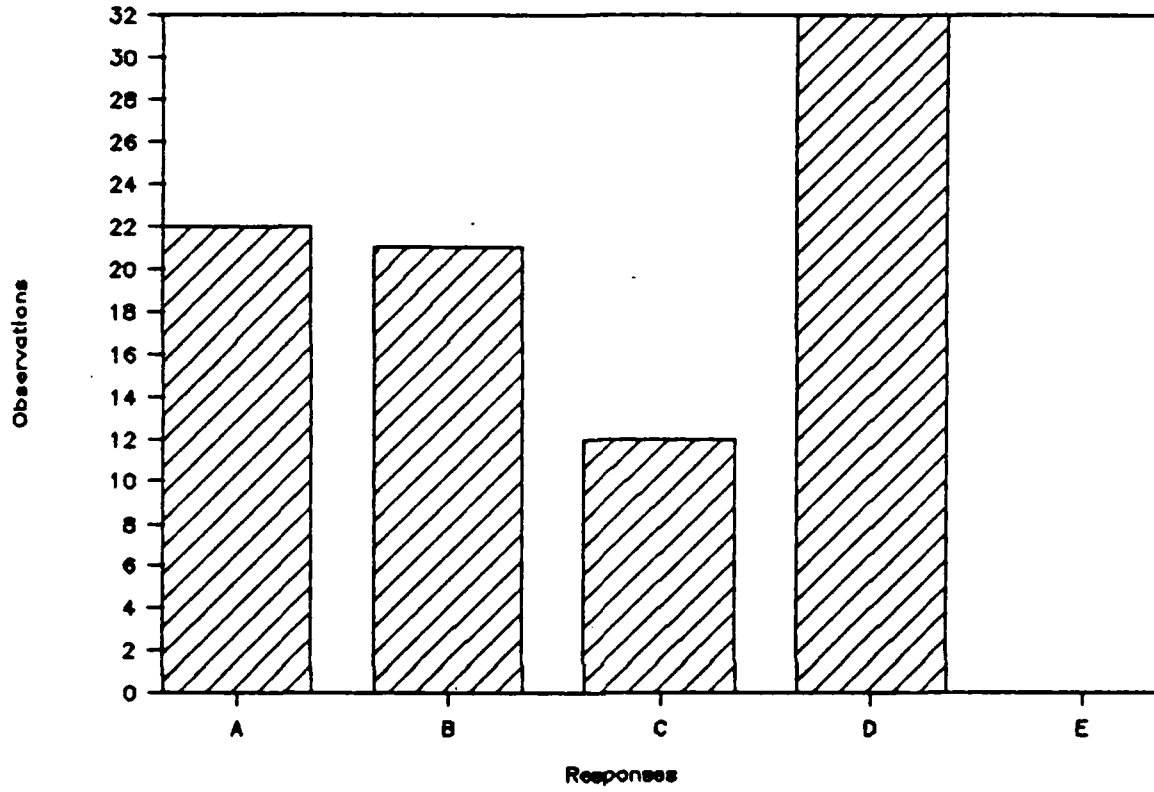
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APPENDIX G



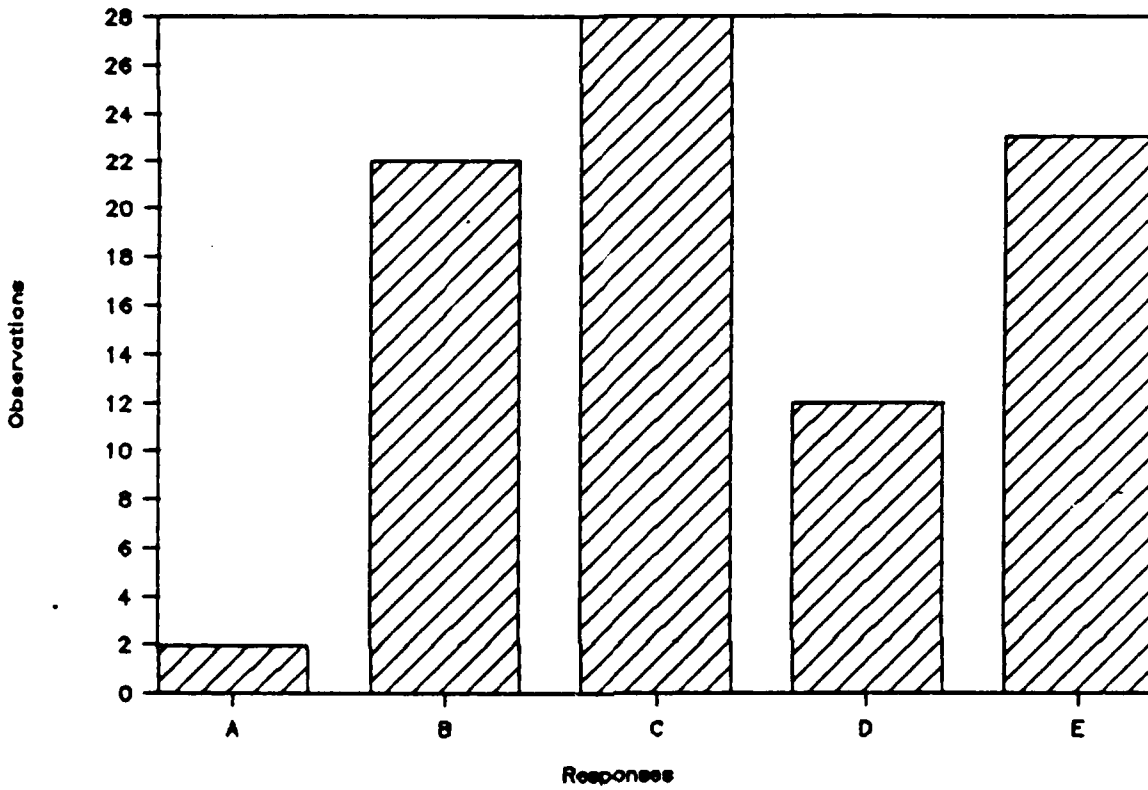
Histogram Professional Preference Questionnaire Question Five

APPENDIX H



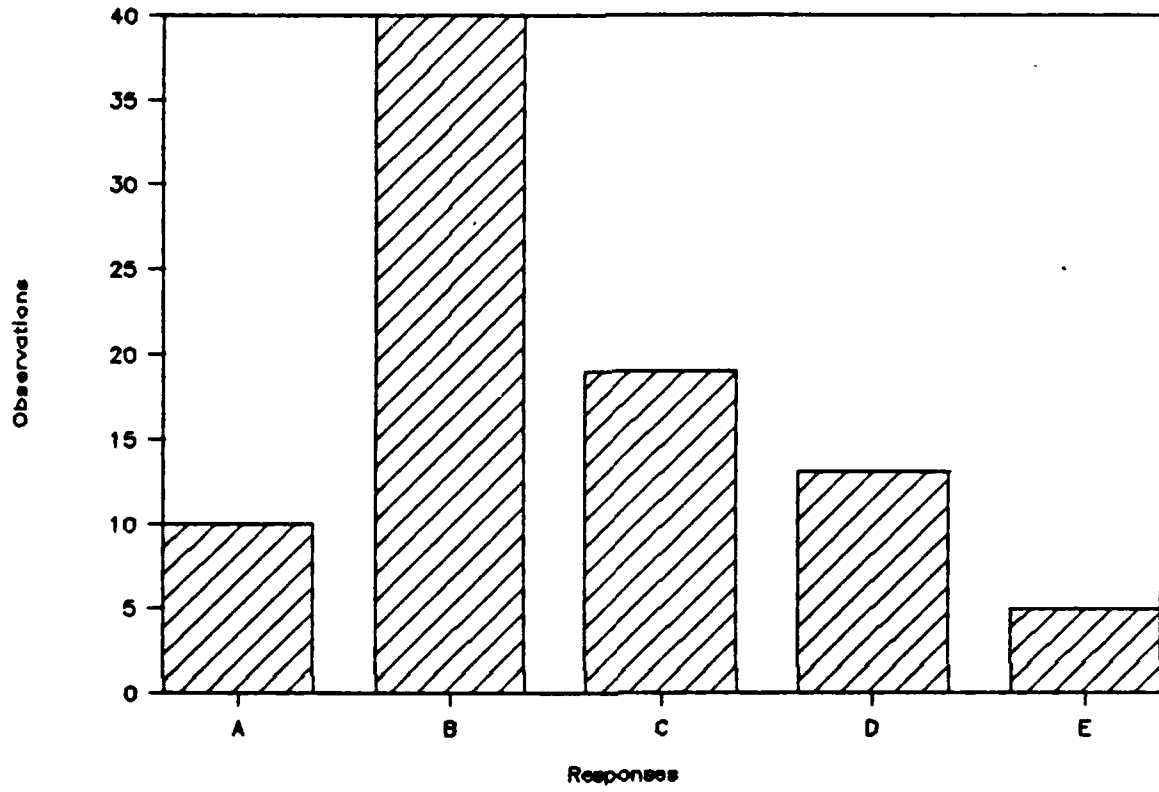
Histogram Professional Preference Questionnaire Question Six

APPENDIX I



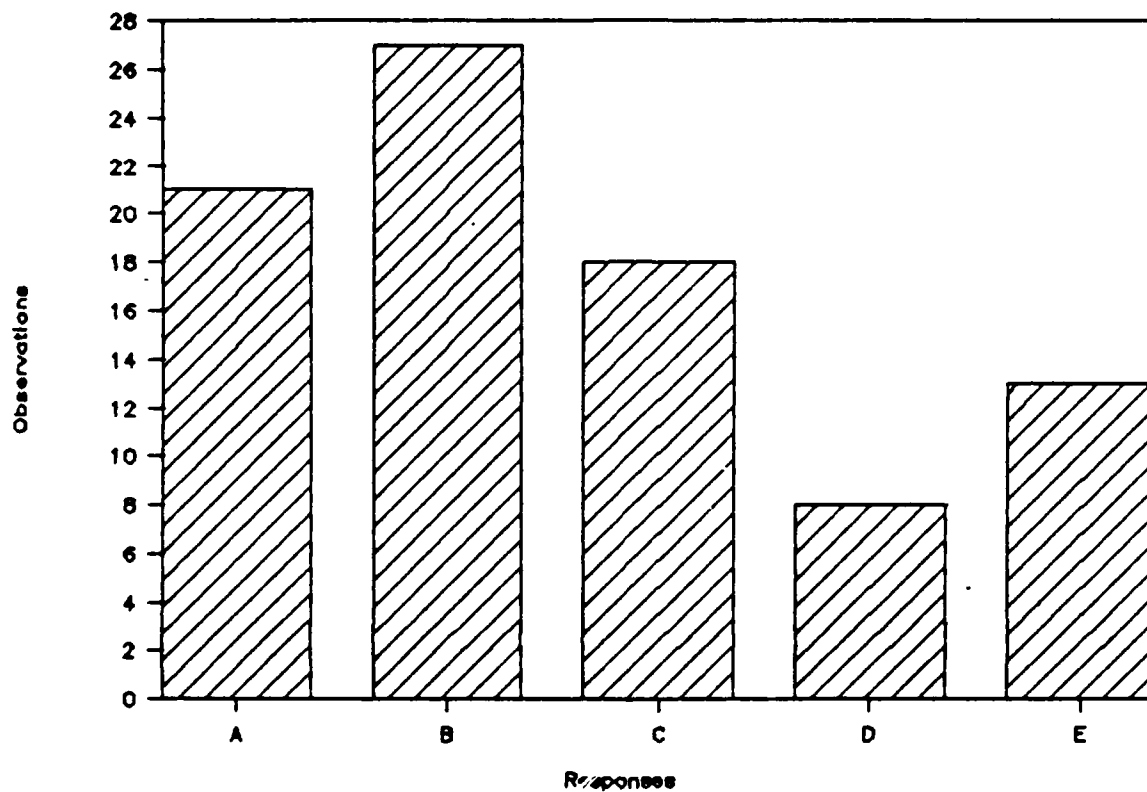
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APPENDIX J



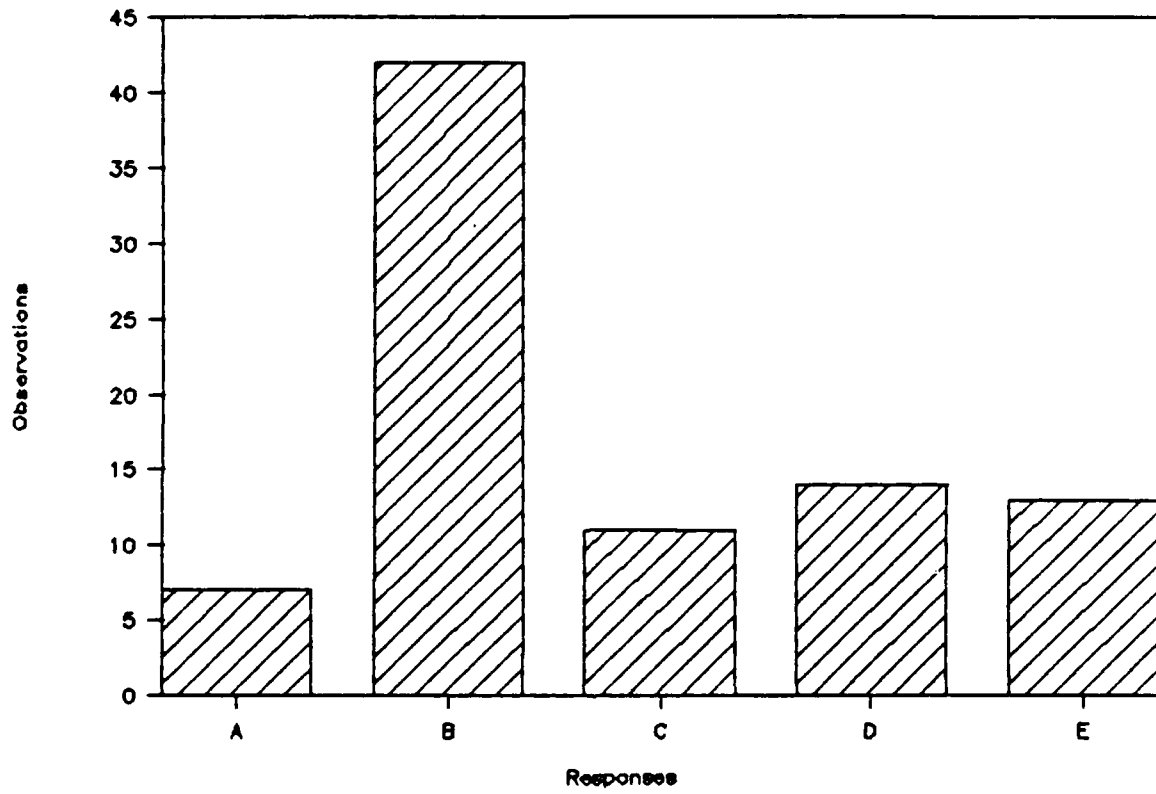
Histogram Professional Preference Questionnaire Question Eight

APPENDIX K



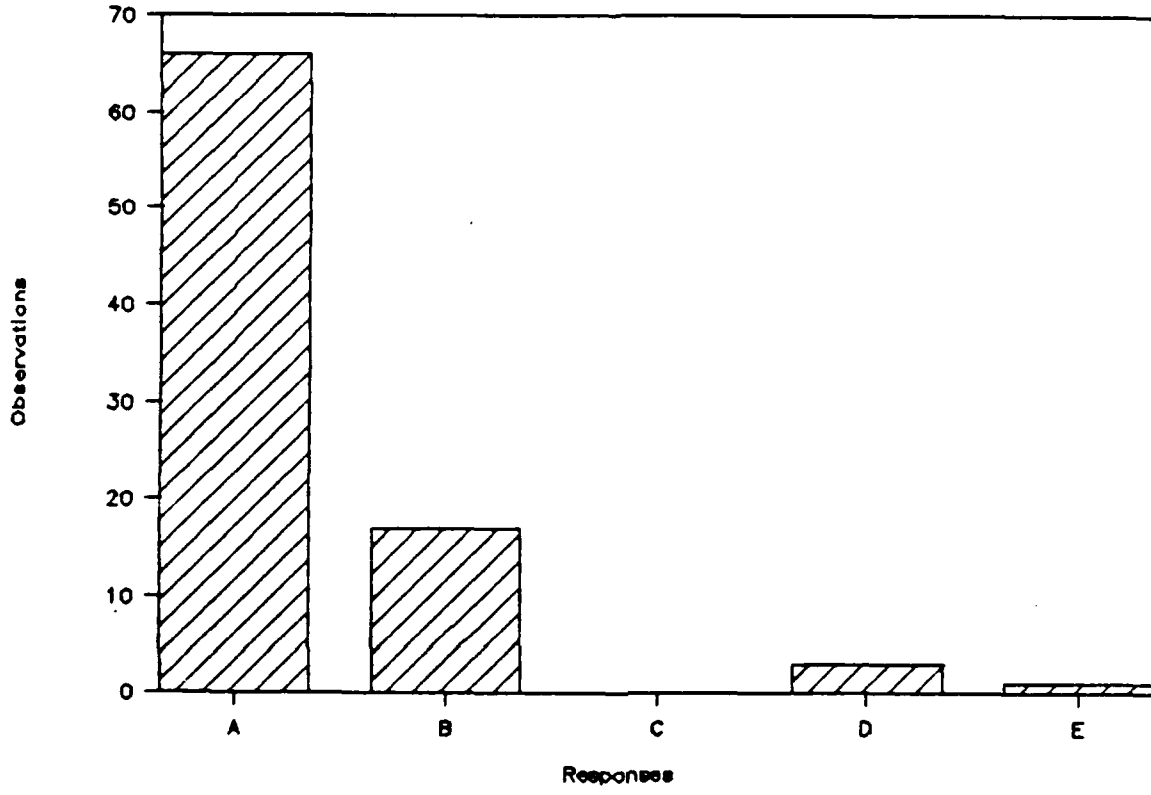
Histogram Professional Preference Questionnaire Question Nine

APPENDIX L



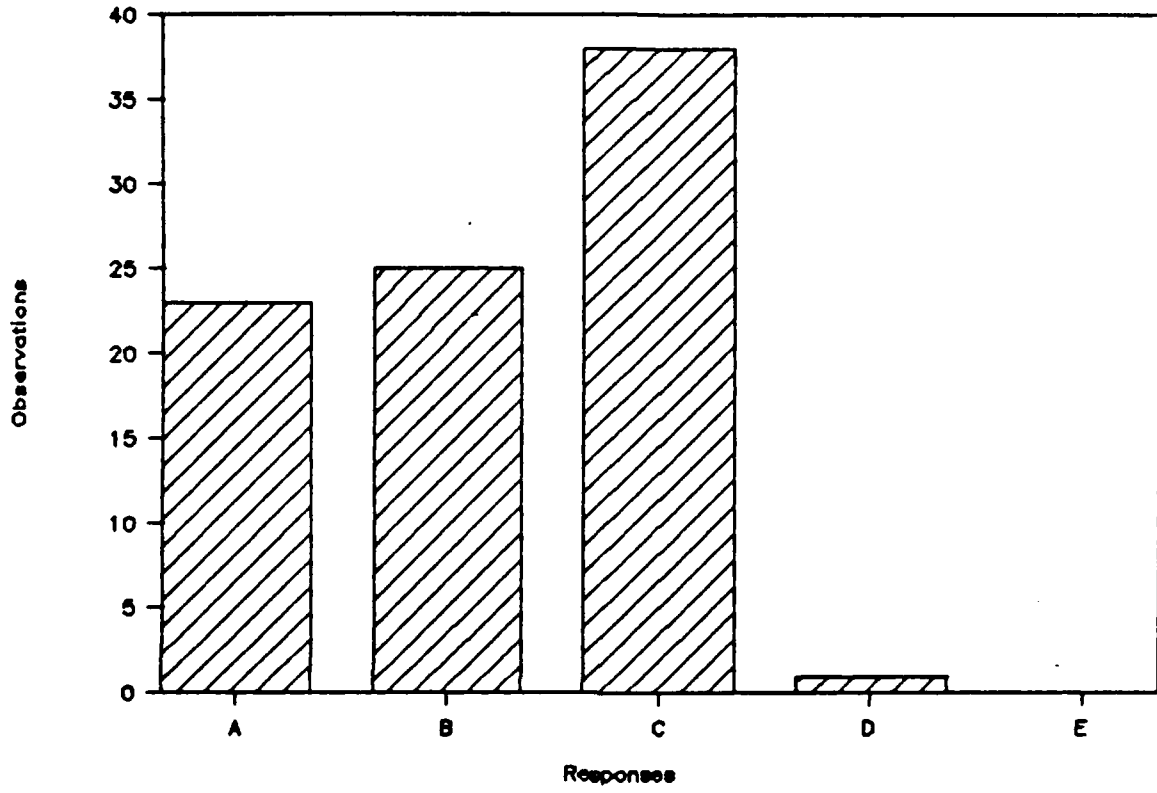
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APPENDIX M



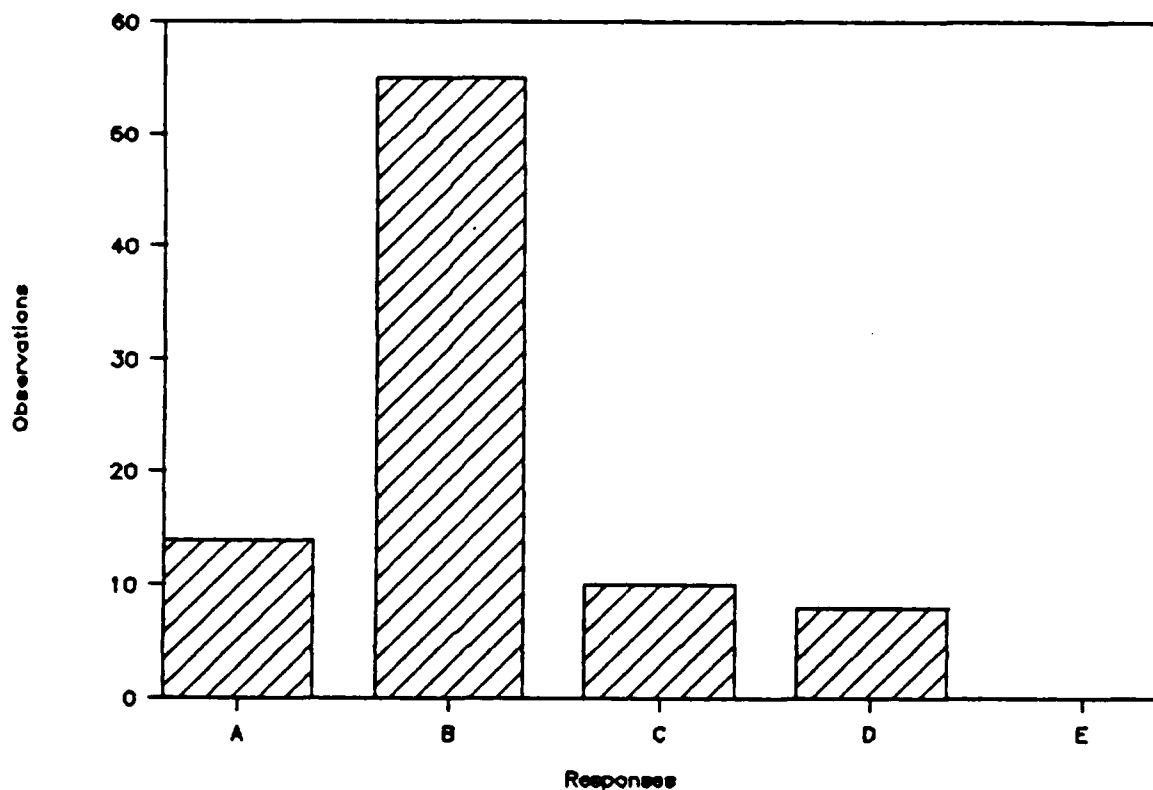
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APPENDIX N



Histogram Professional Preference Questionnaire Question Twelve

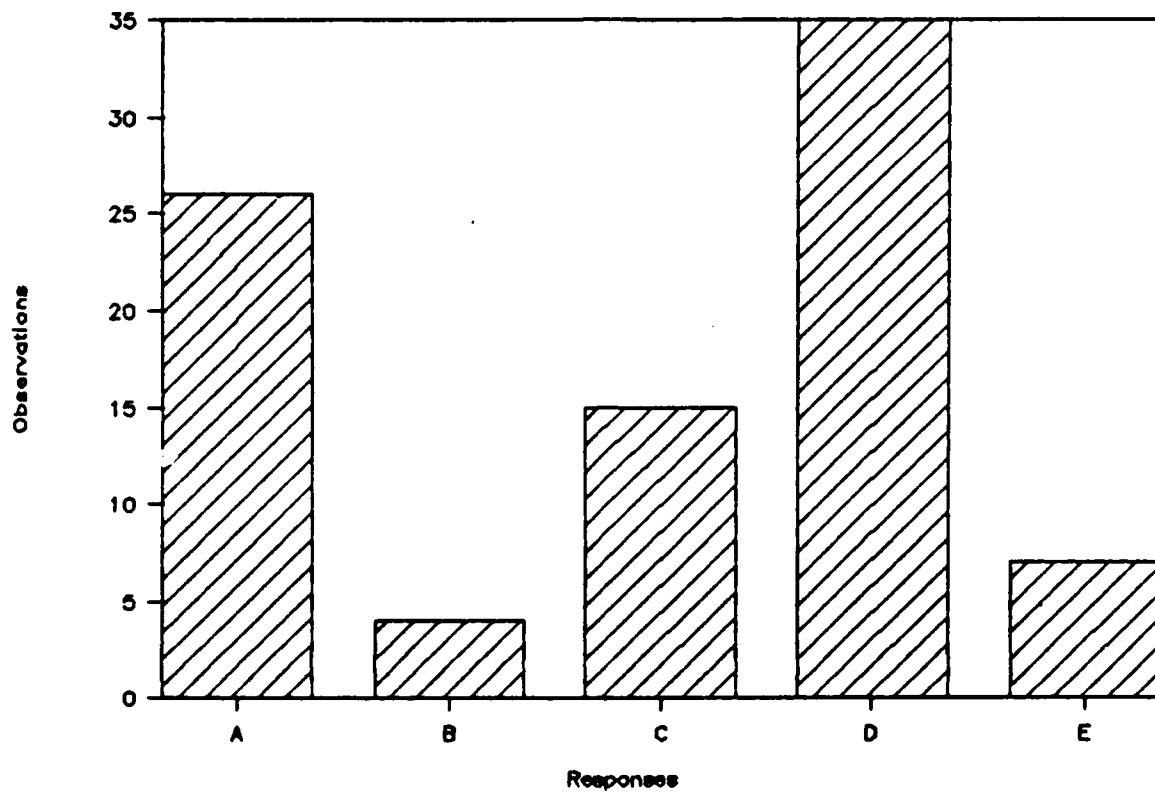
APPENDIX O



Histogram Professional Preference Questionnaire Question Thirteen

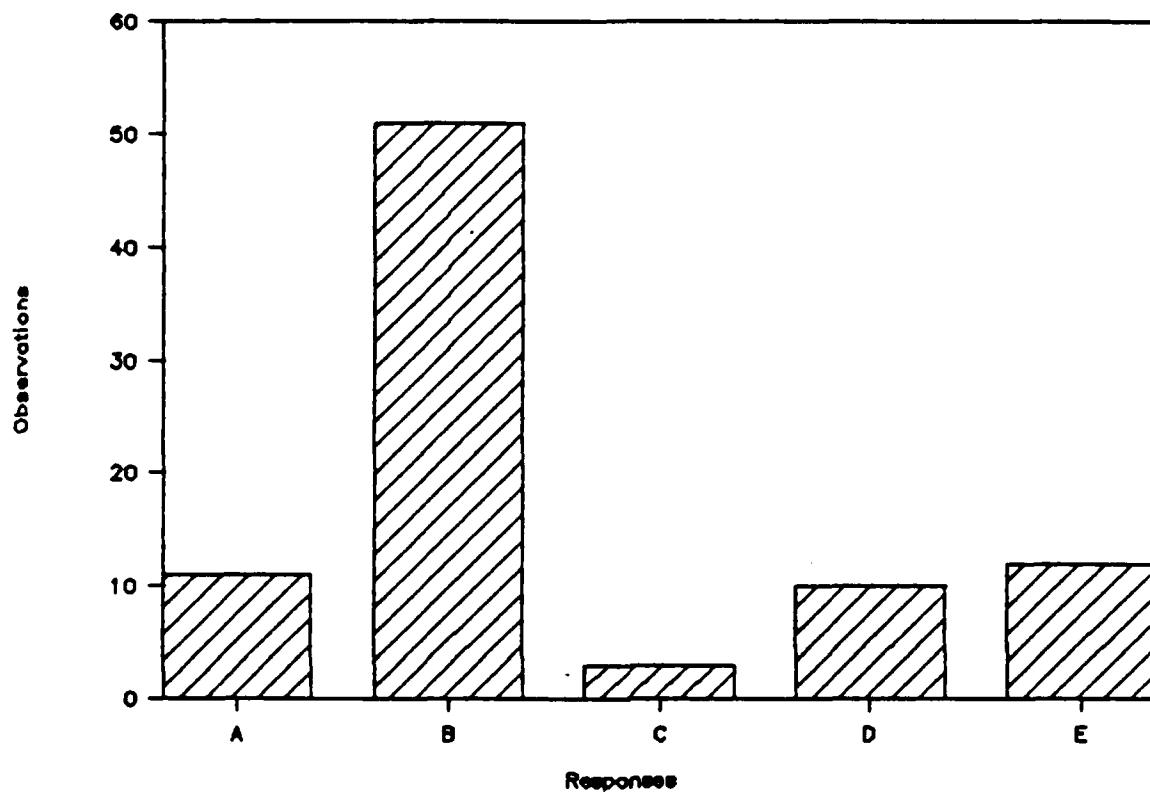
REPRODUCED AT GOVERNMENT EXPENSE

APPENDIX P



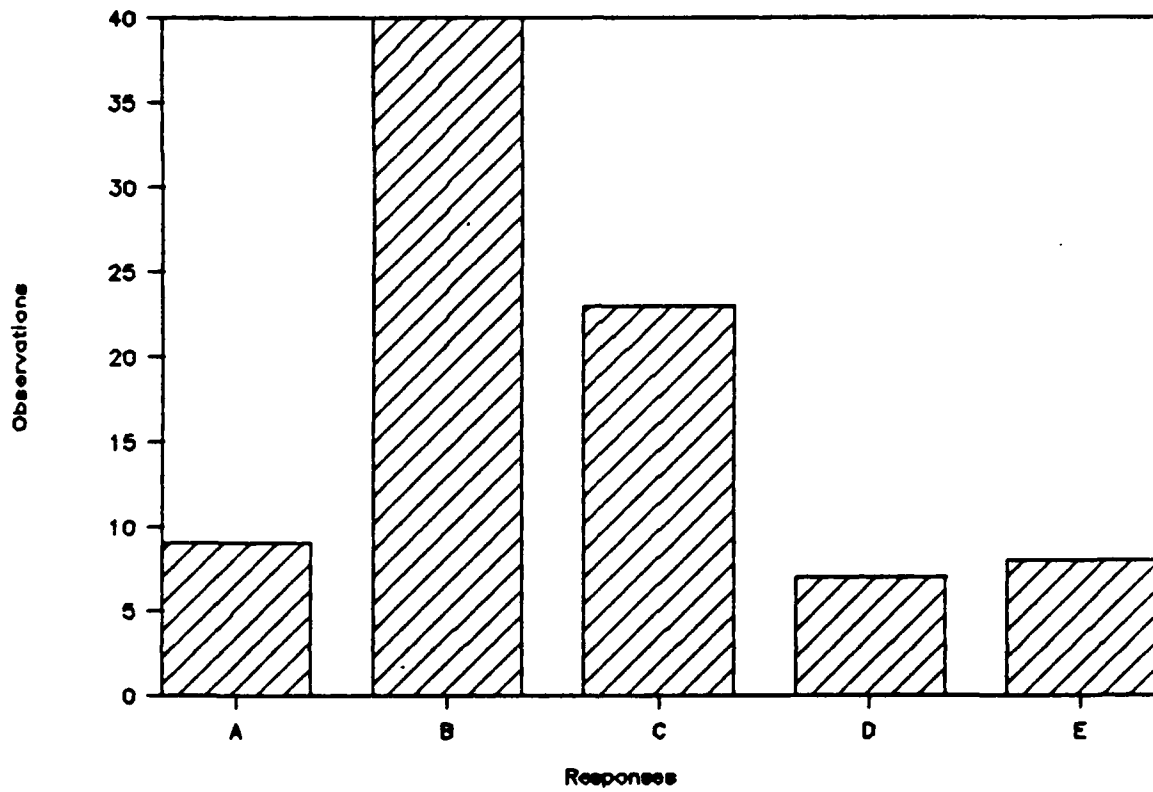
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APPENDIX Q



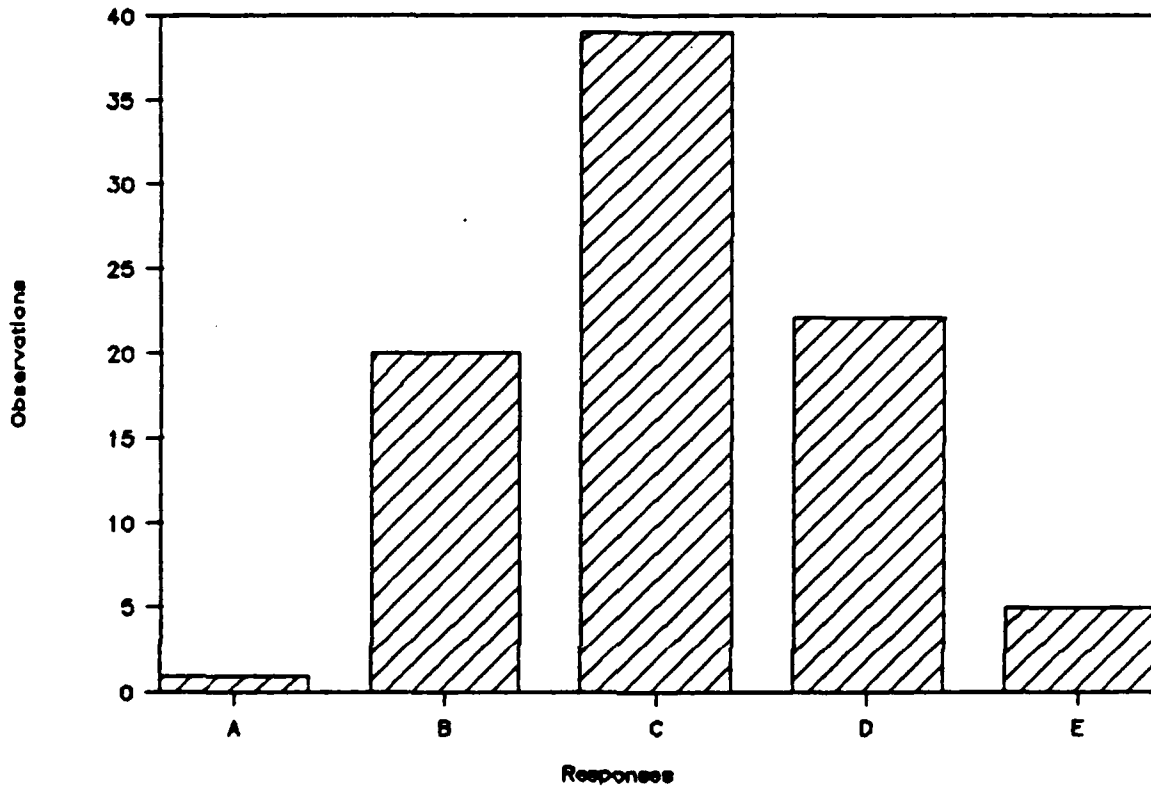
Histogram Professional Preference Questionnaire Question Fifteen

APPENDIX R



Histogram Professional Preference Questionnaire Question Sixteen

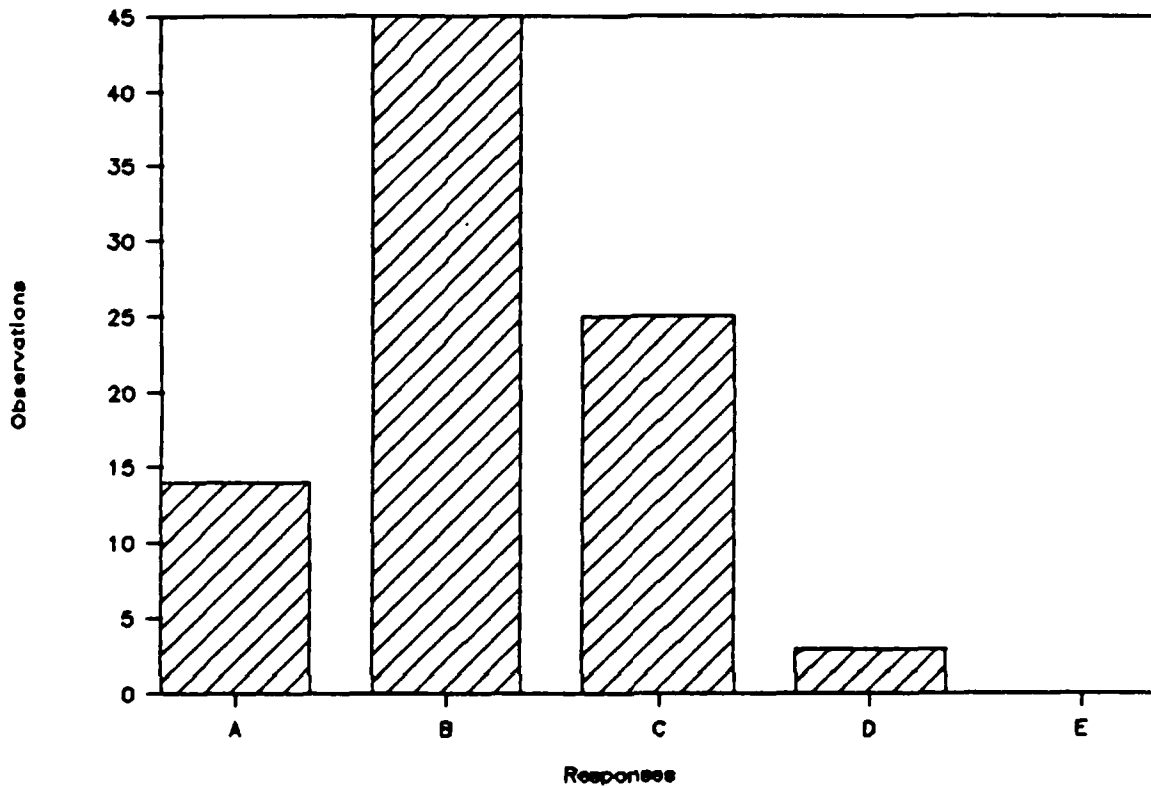
APPENDIX S



Histogram Professional Preference Questionnaire Question Seventeen

REPRODUCED AT GOVERNMENT EXPENSE

APPENDIX T



Histogram Professional Preference Questionnaire Question Eighteen

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