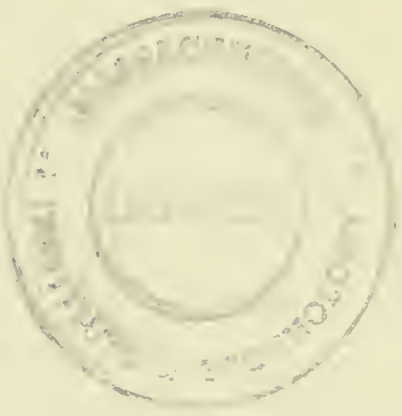


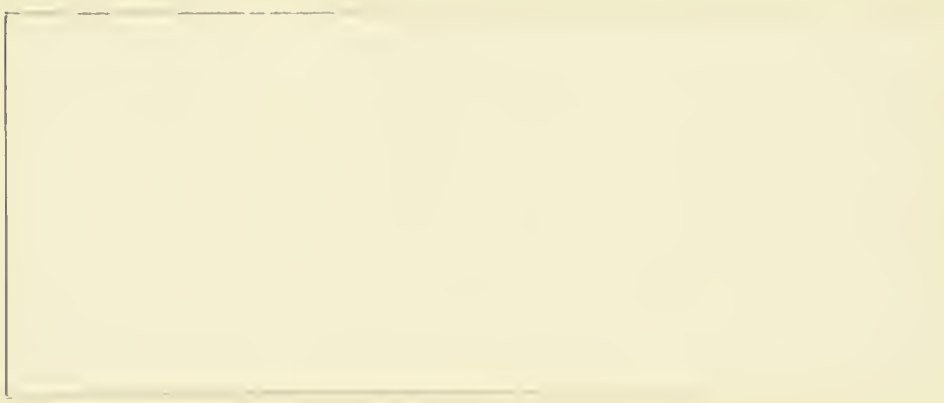
MEASURING INFLUENCE IN ORGANIZATIONAL PURCHASE DECISIONS*

Alvin J. Silk and Manohar U. Kalwani**

WP 1077-79 Revised, April 1980

THE MARKETING CENTER

Massachusetts Institute of Technology
Alfred P. Sloan School of Management
50 Memorial Drive
Cambridge, Massachusetts 02139
(617) 253-6615



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** Sloan School of Management, Massachusetts Institute of Technology, Cambridge, Massachusetts 02139.

ABSTRACT

This paper reports findings bearing on the reliability of measures used in industrial marketing research surveys to identify the structure of buying groups. Results obtained in a pilot study of the purchase of lithographic plates by small printing firms revealed a lack of consensus about purchase influence between pairs of informants from the same organizations. Further, the ratings appear to differentiate among roles but not stages in the decision process.

INTRODUCTION

Received conceptualizations of organizational buying behavior routinely emphasize joint decision making and the attendant notion of a "buying center" as being the relevant unit of analysis. However, this orientation is often not reflected in empirical research conducted in this field which continues to focus attention on a single individual within an organization rather than on a buying collectivity or group (Spekman and Calder 1978,and Wind 1978). The persistence of a number of formidable methodological issues is seen as the principal barrier to further progress. Among the most basic problems to be resolved is that of establishing a viable method for delineating the composition of buying centers. As Bonoma, Zaltman, and Johnston (1977) recently observed, "The complex, vague, and often changing composition of the buying center makes it difficult to ascertain empirically just who is involved in organizational buying" (p. 80).

Examining studies which have been concerned with identifying what Webster and Wind (1972) refer to as the "locus of buying responsibility," one finds that reliance on a single, "key informant" is the most commonplace procedure used to obtain such data. Typically a purchasing agent or someone else believed on a priori grounds to be a major participant is sought out and asked to report which members of the organization take part in the purchasing decision under study, what functions they perform, and/or what degree of involvement/influence these individuals have in different stages of the process (Brand 1972, Buckner 1967, and Platten 1950). Despite widespread application of this approach, a review of the literature summarized below reveals that the reliability and related properties of measurements obtained in this manner have yet to be established. This paper seeks to add to the limited stock of existing knowledge by reporting some findings concerning the degree of consensus and discrimination exhibited by measures of buying process involvement obtained from informants occupying different positions within the same firm.

The first section of the paper examines the research that has accumulated in industrial marketing concerning the psychometric properties of measures that have been used in surveys to identify the composition and structure of organizational buying groups. Attention is focused on findings bearing on the reliability of reports of buying involvement as reflected by the level of intra-organizational agreement that has been observed for such measures. A number of design and data collection instrument issues are noted and briefly discussed. In the second section, we describe a study of the purchasing of lithographic plates by small commercial printing firms wherein some unresolved questions identified in the literature review pertaining to the intra-organization consensus and discriminant ability of influence assessments were investigated. The results section follows and reports the extent of between-informant consensus found for these measures as well as a multitrait-multimethod analysis of their ability to discriminate among different roles and stages in the decision process. Finally, our findings lead us to question the prospects of obtaining reliable and valid assessments of influence through the simple types of rating questions used here and upon which much industrial marketing research places heavy reliance.

RESEARCH ON CONSENSUS

The body of empirical evidence presently available concerning the quality of measures of involvement in organizational purchasing is not very extensive. However, the picture that emerges from an examination of this work is not one that suggests this inattention can be attributed to the absence of unresolved issues. A review of the industrial marketing literature uncovered a handful of relevant studies which are listed in Table 1.

The basic type of reliability information reported in each of these studies was an assessment of the degree of consensus or agreement observed among reports of purchase involvement obtained from two or more participants within the same organization or firm. Investigations of convergence in judgments of the same phenomenon made by different respondents are sometimes referred to as assessments of "validity" rather than "reliability" (e.g., Kane and Lawler, 1978). However, the latter term is used here in preference to the former label in order to emphasize the distinction made by Campbell and Fiske (1959, p. 83) when they defined reliability as "the agreement between two efforts to measure the same trait through maximally similar methods" and validity as "the agreement between two attempts to measure the same trait through maximally different methods" (emphasis added). As discussed below, consensus was assessed in a variety of ways in these studies, some formal and some informal, and thus we summarize each result as indicating either "high" or "low" consensus, in accordance with the judgment rendered by the original authors in reporting their findings. Looking across the eight studies noted in Table 1, one finds a conflicting set of results, "high" and "low" levels of consensus have been found with almost equal frequencies in these investigations. Given these disparate conclusions, the studies were scrutinized for possible sources of unreliability that might account for the differences in outcomes. Materials offering valuable insights into this class of measurement problems are to be found in two traditions of organization research: the informant technique used by sociologists (Seidler, 1974) and the method of peer assessment employed by psychologists (Kane and Lawler, 1978).

INSERT TABLE 1 HERE

As indicated by the entries in the second column, these studies constitute a broad sampling of purchase decisions. Note that whereas in most of these investigations, purchase decisions for the same specific product were examined in a cross section of firms, McMillan (1973), Patchen (1974), and Spekman (1976) studied a cross section of products, generally focussing attention on a different product in each organization. Unfortunately, information was not always reported in sufficient detail to permit the purchase decisions to be categorized according to a typology of buying situation such as that proposed by Robinson, Faris, and Wind (1967)--straight and modified rebuys and new tasks--but a reasonable conjecture would be that the latter two types predominate. Considerable heterogeneity characterized each of the samples of firms studied in regards to basic industries covered. Large scale organizations with established purchasing units and procedures appear to have been the typical setting for most of this work, but meaningful summaries of other organizational variables could not be extracted from the source materials.

Data were collected by means of personal interviews in all the studies except for McMillan (1973) and Choffray (1977) who used mail questionnaires. Spekman (1976) used a combination of personal interviews and self-administered questionnaires. An important element of these studies not covered in Table 1 is the manner in which respondents were selected. The basic approach employed in all of these investigations was a sociometric one wherein a key informant was initially contacted within each organization and asked to identify others "involved" in the decision, some or all of whom became the target respondent population for subsequent measurement efforts. However, the studies differed considerably in terms of the number of decision participants contacted in the follow-up stage and the amount of control that was exercised over their selection. Such differences are partially reflected in the variability within and

across studies of the "number of informants per buying group" shown in Table 1. To illustrate, Patchen (1974) instructed interviewers to contact all persons mentioned by any respondent as having had "any part" in the purchase. He was able to obtain completed interviews with an average of 5.5 respondents per decision where the mean number of individuals mentioned as involved in any way was 15. Restrictions placed on interviewers' access to relevant personnel by the cooperating firms was cited as the major constraint on achieving complete coverage of the buying group membership. In contrast, McMillan (1973) mailed questionnaires to purchasing agents, asking them to select the "scientist" and "manager" they considered to be "most associated" with purchase decisions for the particular product under study. Of the maximum possible response of three respondents per firm (i.e., purchasing agent, scientist, and manager), McMillan received a mean return of two.

Research on the informant technique (Seidler, 1974) and peer assessment (Kane and Lawler, 1978) draws attention to the importance of taking account of such differences in the number and selection of participants when interpreting between-participant consensus. First of all, in examining specific estimates of agreement between a pair of involvement reports, one needs to keep track of the identities of the rater and ratee. Pursuing this matter, we find that in some studies listed in Table 1 consensus assessments were based on comparisons of <u>respondents'</u> <u>self-reports</u> and <u>informants'</u> <u>reports</u> of the same behavior while in other studies the comparisons were <u>between</u> two or more <u>different</u> <u>informants'</u> reports of a third party's behavior. To illustrate, a purchasing agent could provide a self-report of his/her own involvement in a particular decision while, say, the chief engineer and/or treasurer in the same organization each might also serve as informants to report on the purchasing agent's involvement in that decision. Accordingly, for each study listed in Table 1, we have characterized the agreement reported

as either "Self-Informant" or "Between Informant" although in a few instances the actual consensus reported may have mixed these two types of data. Differentiating between respondent or self-report data and informant data is of consequence because they are likely to be afflicted by different sources of bias and measurement error. As will be noted below, self-reports may inflate the respondents' role while a position bias may be present in informants' reports of others' behavior as a result of limited or selective access to information and opportunities to observe the buying process being investigated. Such methods factors can affect the level of convergence observed among different measures and an understanding of them is key to evaluating the merits of competing procedures.

The relevant unit of analysis in these studies is the buying group and pertinent sample size information is shown in Table 1. For six of the eight studies, a single purchase decision was investigated in each of the sample firms and hence the number of buying groups equals the number of organizations. The former quantity exceeds the latter in the cases of Patchen (1974) and Spekman (1976) where several different purchase decisions were studied within some sample firms. The sample size information for respondents is simply the product of the mean number of informants per buying group and the number of buying groups.

Conceptually, it is possible to distinguish between two constructs measured in these studies: participation and influence. Operationally, participation was generally defined by answers to question asked about "who was involved" in one facet or another of some overall decision process while influence was typically measured by responses to questions about "how much say" or effect someone had concerning the course or outcome of the decision process. While the questions asked varied from study to study, the wording of

items reported clearly suggested one construct or the other. The exception was Weigand (1976) who asked respondents to indicate on a four-point scale "how concerned" purchasing agents were with six "elements" of a purchase decision (e.g., "naming the manufacturer"). Weigand recognized the ambiguity of the measure and noted: "'Concern' may be somewhat different than to ask about 'buying authority' or 'buying responsibility', but concern is presumably an accompanying characteristic" (p. 82). Rather than disregard this oft-cited study, we have categorized it in Table 1, somewhat arbitrarily, as measuring participation.

Measures of participation and influence were categorized as "specific" or "global" depending on whether respondents were asked detailed questions about particular phases of the purchase decision process as opposed to a general question referring to the final outcome. The specific questions were usually phrased in terms of a set of decision process stages similar to the "buyphase" scheme proposed by Robinson, Faris, and Wind (1967). The importance of distinguishing between specific and global measures was suggested by the work of Patchen (1963) who found that reports of influence in specific areas were more reliable than global measures.

The final feature of the measures singled out for attention here is whether the question elicited an assessment of participation or influence in the form of: (a) a dichotomous judgment; (b) a rating on a pre-specified scale; or (c) a rank ordering of persons. Most investigators determined participation through the use of open-ended questions of the general form "Who did what?" and hence the response involved a dichotomous judgment in the sense that someone was either explicitly identified as "involved" or implicitly designated as "not involved." In contrast, all of the reported influence measures involved rating or ranking tasks. Kane and Lawler (1978,

p. 557) point out these three types of questions require quite different levels of discrimination from respondents.

Note from Table 1 that the number of positions evaluated by each informant was a fixed number in five studies but varied in the investigations of Kelly (1974), Gronhaug (1977), and Patchen (1974). In the latter three cases, each informant was asked questions about participation and/or influence that related to the entire buying group membership and, of course, the size of these groups varied across the decisions investigated. For all the remaining studies, the particular positions or job titles informants were asked to assess were pre-specified by the investigators and fixed across all organizations. The studies of Weigand (1966) and Spekman (1976) concentrated on a single role, that of the purchasing agent.

Having outlined the manner in which the studies were classified, we may now consider the findings obtained in regards to consensus. Poor agreement between self and informants' reports was reported in each of the first three studies listed in Table 1, those by Weigand (1966), McMillan (1973), and Grashof and Thomas (1976). All of these authors noted the same persistent tendency for respondents to rate themselves or the positions they occupied as being more important than other informants in different positions acknowledged them to be. However, the comparisons reported in these three studies were all made on an aggregate basis, by contrasting the marginal distributions (or some measure of central tendency thereof) of "self-ratings" for a particular position with that for others' ratings of the same position. None of these three studies reported a measure of association between ratings of the same position obtained from respondent-informant pairs within the same organization. Comparisons of marginal distributions for two variables does not yield any information about their covariance and hence these studies do not provide

estimates of intra-organization consensus. A similar issue has arisen in research on family decision making as pointed out by Davis (1971) who cites examples where responses of husbands and wives were found to be similar when compared on an aggregate basis, but dissimilar on a within-family basis. Nonetheless, these studies are valuable in having identified self-aggrandizement as an important source of method variance.

The next three studies listed in Table 1 (Kelly 1974, Gronhaug 1977, and Patchen 1974) are similar in that they involved intensive investigations of past purchase decisions, employed unstructured measures of participation, and reported high within-buying group consensus for this construct. Both Kelly and Gronhaug appear to have assessed consensus on the basis of between-informant agreement. Kelly (1974, p. 424) noted that "little disagreement was detected as to who had performed the five major functions, and members of the decision team were easily identified." Gronhaug (1977, p. 440) remarked similarly that: "In most organizations it was found quite easy to trace the persons involved in the buying process. Furthermore, information from various members of the organization showed consistency, indicating face validity of the observations." Neither Kelly nor Gronhaug reported any specific data bearing on consensus. A marked degree of agreement about participation was also observed by Patchen (1974) who compared self and informant reports and found that of the average of 5.5 persons identified as decision participants and subsequently interviewed, 4.8 confirmed that "they had some responsibility for or were consulted about either the 'buy' decision or the decision about the specific product to buy" (p. 203).

Patchen also administered two global influence questions which asked informants "who was <u>most</u> influential" in making the generic and specific product purchase decisions. Comparisons of the nominations received from

different informants indicated that "the number of persons named as most influential increases almost as fast as the number of informants increases", leading Patchen (1974, p. 206) to conclude that "the people involved in each decision do not agree very much about who had 'most influence'." He suggested that the divergence in perceived global influence was probably due to the decision process being highly diffuse, characterized more by accomodation among numerous parties than by the resolution of an ubiquitous decision maker. The matter of consensus in influence measures was not pursued in either Gronhaug (1977) or Kelly (1974). However, the latter author did mention that "a majority opinion decision rule was used to determine the final rankings of the importance of each team member" (Kelly 1974, p. 425), thereby acknowledging the presence of some inconsistencies among informants in their global influence rankings.

The last two studies listed in Table 1 (Choffray 1977 and Spekman 1976) presented more systematic analyses of the properties of involvement measures. Choffray's data were collected in separate mail surveys undertaken to assess the market potential for two new products. The informants' task was to indicate the pattern of participation that would be expected to occur were their organizations to consider purchasing such a new offering. A pair of informants in each sample firm provided involvement ratings on a constant sum scale for a set of specified job titles and decision phases. However, Choffray subsequently dichotomized the ratings, distinguishing only between involvement and non-involvement, rather than degree of involvement. In addition to examining the consensus between informants, Choffray also investigated their ability to discriminate among different phases of the decision process

in judgments about expected participation. A substantial degree of agreement between pairs of informants from the same organizations was found in both studies. The ability of informants to differentiate between phases of the decision process in anticipating who would or would not be involved was also supported using criteria suggested by Campbell and Fiske's (1959) methodology for evaluating discriminant validity. It should be noted that in his analysis of consensus and discrimination, Choffray aggregated ratings across the several job titles informants rated and hence, the quality of the participation measures for specific job titles or positions was not addressed.

The final piece of evidence to be considered here is that found in Spekman's (1976) dissertation. Most of the details mentioned here are available in published accounts of the original study (Spekman 1978 and Spekman and Stern 1979). Using global measures of purchasing agents' relative participation and influence, Spekman found the level of consensus among buying group members to be generally low for the 52 decisions he investigated. For each buying group, Kendall's coefficient of concordance was computed as an index of agreement among informants who in the average buying group numbered about 6 persons. The median value of the 52 coefficients was .314 for the participation measure and .483 for the influence measure. Both measures were total scores obtained by summing responses across multiple items, each of which informants had rated on a five point scale. The items comprising the participation scale were of a general nature while those used in the influence scale were specific in the sense of relating to eight phases of the decision process. Given that the measures were summated scores, they have been identified as "global" in Table 1. Both scales exhibited a sufficient degree of internal consistency to warrant treating the items as comprising a

scale, the value of Cronbach's (1951) α statistic being .70 for the 5 item participation scale and .78 for the 8 item influence scale. Both values appear statistically significant at the .01 level as judged by Feldt's (1965) approximate test. Spekman found between-informant consensus to be similarly limited for measures of several other constructs relating to the structure of buying groups.

The rather disheartening implication of Spekman's findings is that for global measures of relative participation and influence, the use of internally consistent multiple item scales (as opposed to the usual practice of relying on a single item) does not seem to lead to high reliability, at least as reflected in consensus among informants. Two matters not discussed by Spekman, but of considerable interest in the present context are: (a) to what extent did informants differentiate among decision process stages in their ratings of the purchasing agents' influence; and (b) to what extent did consensus vary according to specific stages in the decision process? Spekman focussed attention on consensus with respect to the influence total score, not the items comprising it relating to specific stages. It would seem reasonable to expect that purchasing agents would be perceived to be highly influential at some stages but not others. If this were the case, then influence ratings for different stages would not be single factored. Note that this possibility is not precluded by the fact that Spekman found substantial internal consistency among the 8 specific items as reflected by the value of .78 for Cronbach's α inasmuch as α estimates the proportion of total score variance due to all common factors present in the items and is an upper-bound for the principal factor running through the items (Cronbach 1951).

By way of conclusions then, the pattern of results obtained from the

studies summarized in Table 1 suggests that there is high between-informant consensus about participation when the latter is measured by questions pertaining to specific stages in the decision process requiring dichotomous judgments about participation versus non-participation. In contrast, census regarding influence, whether self-informant or between-informant, con- was found to be low in the entire set of studies reviewed here, all but one of which relied on global measures involving relative judgments in the form of rankings or ratings. Only Grashof and Thomas (1976) made use of an instrument to measure influence that differentiated among specific stages in the decision process but, as pointed out above, they examined consensus on an aggregate basis rather than within organizations or buying groups. Indications that self-assessments tend to yield an exaggerated picture of respondents' own involvement were found in three studies that utilized rating and ranking questions but such a tendency was not reported in a fourth study that asked an open-ended question. The key questions raised by these findings then are whether or not specific assessments of influence can be obtained from informants that discriminate among stages in the decision process, and, if so, what level of intra-organization consensus could be attained with such measures?

METHOD

Background

A pilot study of the purchase of lithographic plates was undertaken among a purposive sample of 25 printing firms located in the greater metropolitan Boston area. All firms included in the sample were general commercial printers as opposed to specialized or in-house printing operations.

In terms of Robinson, Faris, and Wind's (1967) typology of buying situations, the purchase of lithographic plates by the types of firms studied here falls somewhere between the straight and modified rebuy categories of purchase decisions. Lithographic plates are a supply routinely used in printing operations and purchased at regular intervals. Although the plates account for only a small fraction of printing costs, their performance has a critical bearing on the quality of the final printing. The principal suppliers are three very large manufacturers and a great deal of competitive marketing effort is directed at printing firms. As a result, printers frequently have occasion to re-evaluate their brand selections and switching occurs.

A distinctive feature of the present work is that the organizations investigated were small in size and did not employ purchasing specialists. Twelve of the 25 firms had fewer than thirty employees and only six had more than one hundred. In all but two cases, the owners were involved in the day-to-day management of the firms' operations. While a great deal of industrial marketing activity involves relatively undifferentiated organizations with few employees, the bulk of the available research on organizational purchasing behavior has been concerned with highly structured, large scale organizations that possess professional purchasing staffs. It bears noting that organization size and structure are key variables in theoretical analyses of industrial buying recently put forth by Robey and Johnson (1977) and Spekman (1978).

Data Collection

Preliminary investigation revealed that occupants of some or all of four positions constituted the main sphere of potentially relevant decision participants. While the exact titles did, of course, vary from organization to organization, for ease of reference we employ the following set

of role designations: (1) general manager (chief operating executive of the firm); (2) foreman (supervisor in charge of all printing operations); (3) platemaker (responsible for carrying out the processes required to prepare the plate used in the printing process); (4) pressman (skilled craftsman who operates the press which produces the printed copy).

Personal interviews were conducted with two members of each firm, one with either a general manager or foreman and the other with a platemaker or pressman. The former group we identify as "managers" and the latter as "users". The firms were initially contacted by telephone to solicit their co-operation, identify the manager to be interviewed, and set up a convenient appointment with him. The managers, in turn, provided the assistance needed to arrange for the user interviews.

Both managers and users were asked the following set of three questions for each of the four roles mentioned above:

1. If you had to make a change in lithoplate brands because of problems which were occurring with your usual brand, how likely would each of the following individuals be to suggest the need for a change?
2. How much influence would you expect each of the following individuals to have in evaluating alternative brands?
3. How much influence would you expect each of the following individuals to have in making the final decision as to what brand to change to?

These three questions were asked to permit respondents to differentiate their assessments according to particular stages in the decision process. Descriptions of how switches in suppliers actually came about, obtained in a preliminary investigation of other similar firms, suggested that these three questions tapped key discernible phases of the decision process. Note that the above questions asked about expectations rather than past events. Such

questions are routinely asked in industrial marketing research studies where information is sought about the composition of buying groups to support various marketing mix decisions.

Respondents were provided with a five-point rating scale for each question. For the first question pertaining to the likelihood of initiating the change, the response categories were labled "unlikely", "somewhat likely", "likely", "very likely", and "extremely likely". For the two influence questions, Patchen's (1963) scale descriptors were used: "little or no influence", "some influence", "quite a bit of influence", "great influence", and "very great influence". Responses were scored on a one to five scale with higher scores indicating greater involvement or influence.

RESULTS

Aggregate Comparisons

Separate frequency distributions of the managers' and users' responses were tabulated for the twelve questions asked--four positions rated with respect to each of three decision functions or stages. Table 2 shows the medians and modes for the two sets of marginal distributions. Judged by either measure of central tendency, the managers' and users' ratings appear quite similar. For seven of the twelve questions, the medians of the two distributions are identical and only in one case do the medians differ by more than one scale point. An examination of the modes indicates only slightly less consistent a picture of aggregate similarity in the ratings provided by managers and users.

INSERT TABLE 2 HERE

While the summary statistics shown in Table 1 were derived from a small sample of 25 observations and did not vary greatly across positions rated

or decision functions, an interpretable picture of purchasing involvement can be drawn from them. The foreman appears to be a key decision participant in all three stages. Not surprisingly, general managers were judged as being less likely to initiate a change than any of the other three types of personnel, all of whom are directly involved in using the plates. However, the general manager was acknowledged to be influential in evaluating alternatives and making a final decision. The role of platemakers and pressmen was foremost in initiating changes but diminished when it came to evaluating alternatives and making a final decision. Opinion prevalent in the printing industry would suggest greater differentiation between the platemaker and pressman roles than the present data indicate.

Consensus

To determine the degree of consensus between managers and users within the same firm regarding their perceptions of purchase influence, we cross tabulated the two sets of responses and computed a measure of agreement for each of the twelve ratings. The coefficient used is that proposed by Cohen (1960) and discussed in Bishop, Feinberg, and Holland (1975, pp. 395-397). Fleiss (1975) examined the numerous measures of agreement for categorical data which have been proposed in the psychometric and statistics literature and concluded that κ is one of only two measures "defensible both as chance-corrected measures and as intraclass correlation coefficients." More recently, Kraemer (1979) has shown how κ relates to the classical psychmetric model for reliability of interval data (the ratio of true score variance to observed score variance) and discussed its interpretation and use "to indicate the degree of loss of precision or power of statistical procedures" due to the unreliability of observations. Previous applications of κ to marketing research problems similar to the present one may be found

in Davis, Douglas and Silk (1980). As applied here, the value of the coefficient is given by:

$$\kappa = \frac{O - E}{1 - E},$$

where:

O = observed proportion of cases within the sample where the manager and user from the same organization gave identical responses in rating a particular position with respect to a specific decision stage.

E = expected proportion of identical ratings under the assumption that the managers' and users' ratings are independent.

Thus this coefficient reflects the excess of observed over chance agreement, normalized by the maximum possible value of this difference given the marginal distributions of the observed responses. The coefficient is zero when the observed agreement is just equal to that expected by chance and unity when the maximum possible excess of observed over chance agreement is obtained. Negative values of the coefficient indicate less observed agreement than expected by chance. Note that this coefficient is a measure of agreement in the sense that it depends only on the frequency of identical ratings -entries in the main diagonal-as distinct from an index of association which would also take account of the off-diagonal frequencies.

To illustrate the calculation of K, consider the following contingency table, obtained by cross tabulating the managers' and users' ratings of the "general manager's" influence in the "initiating change" stage.

MANAGER'S RATINGS

USER'S RATINGS	1	2	3	4	5	Total
1	2 (0.64)	1	2	1	2	8
2		1 (0.96)	1	2		4
3		1	3 (1.2)		1	5
4		1		1 (0.8)	3	5
5		2			1 (0.84)	3
Total	2	6	6	4	7	25

The figures in parentheses along the main diagonal are the expected frequencies computed using the marginal distributions of the two sets of ratings. For these data we obtain:

$$O = \frac{1}{25} (2 + 1 + 3 + 1 + 1) = 0.32$$

$$E = \frac{1}{25} (0.64 + 0.96 + 1.2 + 0.8 + 0.84) = 0.1776$$

$$K = \frac{0.32 - 0.1776}{1 - 0.1776} = +0.173$$

Two sets of agreement coefficients were computed. One was obtained by collapsing the five point scale into two categories and treating the ratings as a dichotomous measure of influence. The two highest scale levels formed the "influential" category with the three lesser ratings being combined into a "non-influential" grouping. The second set of coefficients was computed using the full range of ratings from the original five point scale. Table 3 presents the coefficients.[1]

INSERT TABLE 3 HERE

It can be seen that the agreement coefficients tend to be larger when the ratings are treated as a dichotomous measure rather than as a five point scale. In line with the discussion of previous studies, this apparent difference in consensus may indicate that judgments about the identity of decision participants are more reliable than assessments about the extent of involvement or influence. Overall however, the level of agreement found here is quite low. This is surprising in light of the fact the organizations investigated were small in size, a condition which might be expected to minimize differences between informants with respect to knowledge of and opportunities to observe the purchasing process. Even for the dichotomized ratings, only half of the twelve coefficients exceed .2, but five of these six coefficients involved the pressman and platemaker ratings. Thus, managers and users seemed to agree more about the latter's role than the former's but the tendency is not a particularly pronounced one. The lack of intra-organization consensus reflected in these coefficients contrasts with the similarities in the marginal distributions of the managers' and users' ratings noted above (Table 2) and serves to illustrate the point made by Davis (1971) regarding how aggregate comparisons between types of informants can produce a misleading impression of within-group consensus.

The possibility that the low levels of agreement found here might be due, at least in part, to a systematic position bias discussed previously was also investigated. For each of the twelve assessments, the ratings given by the manager and user in the same firm were compared. Table 4 shows the frequency of agreement and in the cases of disagreement, the frequency with which one or the other informant's rating was higher. The results reveal that managers tended to give higher ratings than users did when assessing influence in the first two decision stages but not the third. A sign test was carried out to test the null hypothesis that managers' ratings exceeded users'

ratings with no greater frequency than the reverse occurrence. Table 4 shows the binomial probabilities associated with the sign test for each of the twelve ratings. Only a few of the results approached conventional significance levels. The tendency sometimes reported in previous studies for ratings to be biased in a direction related to the informants' own position is not evident in these data to any marked degree. To the contrary, managers were inclined to attribute more involvement to pressmen and platemakers than were users for two of the three decision functions rated.

INSERT TABLE 4 HERE

Discrimination Among Roles and Decision Stages

Some further analysis was undertaken to investigate the extent to which the measures discriminated among the positions or roles rated and stages in the decision process. Intercorrelations among the ratings provided by managers and users for the various roles and stages were examined with reference to two criteria suggested by Campbell and Fiske's (1959) multitrait-multimethod matrix approach to assessing discriminant validity.

Tables 5-7 present the matrix of intercorrelations among the 24 separate influence ratings (2 Informants x 4 Roles x 3 Stages). The measure of association is Yule's Q, computed for the 2x2 contingency tables formed by cross-tabulating pairs of ratings, dichotomized in the manner explained previously in connection with the discussion of the coefficient of agreement. In the present context, Q reflects how much better than chance one could predict one assessment of influence (or non-influence) by always predicting the same outcome indicated by a second assessment (See Davis 1971, Ch. 2). Q may vary from -1 to +1 and is 0 where the two

assessments are independent. A positive Q value indicates a tendency for the two assessments of influence vs. non-influence to be similar while a negative value indicates a tendency toward dissimilar assessments.

Tables 5-7 correspond to the main elements of Campbell and Fiske's (1959) multitrait-multimethod matrix. The two informants (manager and user) are treated as different "methods" while the various combinations of roles and decision stages rated constitute different "traits". Tables 5 and 7 contain the "within informant" correlations for the managers and users, respectively, and are analogous to Campbell and Fiske's monomethod-hetereotrait triangles. The "between informant" correlations are found in Table 6 and are treated as two "hetereomethod-hetereotrait" triangles separated by the diagonal of convergent coefficients (underscored) which represent the correlations between managers' and users' ratings of the same roles and descision stages. Within each of the four hetereo-role/stage triangles contained in Tables 5-7, three different types of correlations may be distinguished: (a) correlations between ratings of the same role for two different stages of the decision process (enclosed in parentheses); (b) correlations between ratings of two different roles for the same stage of the decision process (enclosed in brackets); and (c) correlations between ratings of two different roles for two different stages of the decision process (not enclosed in either parentheses or brackets).

INSERT TABLES 5-7 HERE

Recall from the previous discussion that consensus as measured by Cohen's Coefficient of Agreement (Table 3) appeared strongest for five of the six measures relating to the influence of the pressman and platemaker. Since an evaluation of the discriminating quality of meaures is only warranted if they exhibit some meaningful level of convergence, attention is confined to the

five aforementioned ratings involving the pressman and platemaker. The Q values for these measures found in the main diagonal of Table 6 reflect the degree of association or convergence between two measures of the same trait and are the counterparts of the coefficients of agreement reported previously as indices of consensus. Note that "agreement" is a special case of "association" (Bishop, Fienberg, and Holland 1975, pp. 393-394). Fisher's exact test was computed for the 2x2 contingency tables underlying each of the five congruent Q coefficients reported in Table 8 whose magnitude varied from .54 to .90. The one tail probabilities for Fisher's test are also shown in Table 8 and indicate that the null hypothesis of no association between managers' and users' ratings could be rejected at the .10 level (or less) for four of the Q coefficients but at only the .20 for the fifth coefficient.

As evidence of discriminant validity, Campbell and Fiske suggest that a measure should correlate higher with another measure of the same trait than it does with other measures having neither trait nor method in common. The mechanics of performing this test involve comparing the Q values for the relevant convergent correlations found in the main diagonal of Table 6 with each of the other 12 Q values representing the "between informant" correlations located in the same row and column of the two hetereo-role/stage triangles contained in Table 6. Counts of the number of directional confirmations found for this criterion are summarized in Table 8. The convergent coefficients exceeded the "same stage-different role" and "different stage-different role" correlations in more than 80 per cent of the comparisons, thereby providing a favorable indication of discrimination. However, only half of the comparisons involving "same role-different stage" correlation were confirmatory. The pattern of these results

suggests then that the influence ratings reflect some differentation among roles but not decision stages.

INSERT TABLE 8 HERE

A second criterion of discriminant validity put forth by Campbell and Fiske that can be applied here is that a measure should correlate higher with a different measure of the same trait than with measures of other traits that happen to employ the same method. In the present context, this calls for comparisons between a measure's convergent correlation and its correlation with the 11 other role-stage ratings found in each of the "within manager" and "within user" triangles found in Tables 5 and 7, respectively. Table 9 summarizes the outcome of the comparisons. The results indicate that the discriminant quality of users' ratings was somewhat better than that of the managers', but as was found in the previous test, the absence of differentiation between stages in the decision process is apparent. Poor discrimination with respect to roles as well as stages is evidenced for the managers' ratings where only about a half of the comparisons involving "same stage-different role" were in a confirmatory direction.

INSERT TABLE 9 HERE

As a final indication of the discriminating qualities exhibited by the ratings, the median values of the Q coefficients within each of the four hetereo-role/stage triangles were computed for the three types of role/stage correlations identified above. The median Q values are displayed in Table 10. The median of the "same role-different stage" correlations is positive for all four triangles and generally appears elevated as compared

to the median Q's for the "same stage-different role" and "different stage-different role" correlations which fluctuate near zero.

INSERT TABLE 10 HERE

To sum up the results of this section then, we found some modest evidence of role differentiation but there was little indication of discrimination among stages in the decision process. The influence attributed to a role at some particular decision stage tended to be essentially independent of assessments made of other roles for the same stage. However, how influential a role was judged at one stage was generally positively related to the judgment made of that role for other stages. We are aware of no a priori reason for expecting the latter type of correlation and hence the lack of discrimination among stages is perplexing. Whether the limitations of the measure's discriminating qualities are due to method factors or real interdependencies among the roles and stages could not be clearly ascertained from the present analyses. With a more extensive data base consisting of additional measures and a larger sample, more powerful structural equation methods for analyzing multitrait-multimethod matrices developed by Joreskog (1970, 1971) discussed in Bagozzi (1980) could be used to address this matter.

Certain limitations of the foregoing analyses deserve to be emphasized. First of all, the above analysis of measure discrimination was an opportunistic one in that it considered only that subset of role-stage influence ratings for which the level of between informant convergence appeared sufficient to merit further attention. Secondly, the number of ratings (12 per informant) and correlations (276) examined here are very large relative to

the number of observations underlying the analysis (25 pairs of informants). Finally, with a small sample, the magnitude of Yule's Q is sensitive to shifts in the raw ratings and no test-retest reliabilities or other estimates of the magnitude of within-informant random measurement error are available for the individual ratings. Hence, the above results should be regarded as tentative.

DISCUSSION

The low level of consensus and limited degree of purchase stage discrimination exhibited by the measures employed here along with the results reviewed from previous studies combine to indicate a rather discouraging picture of the quality of influence assessments obtained through the use of simple rating procedures commonly administered in industrial marketing research surveys. However, the research that has accumulated to date, including the present study, has not progressed very far in establishing knowledge about the sources and magnitude of systematic and random measurement error that offers much direction about how to improve measurement in this area. To illustrate, several of the studies reviewed indicated that self-ratings of involvement tend to be inflated related to those obtained from informants, but here little in the way of position bias was evident in between-informant comparisons. While these results cast doubt on validity of self-ratings, any advocacy of reliance on informants is undetermined by the poor degree of between-informant consensus observed here. Response effects such as self-aggrandizement and position biases could be better identified and understood by including measures beyond self- and informant assessments in a multitrait-multimethod matrix analysis. For such purposes, the kinds of observational and unobtrusive methods employed

by Cyert, Simon and Trow (1956) and Pettigrew (1975) deserve consideration. In a similar vein, it would be valuable to know how the magnitude of within-person agreement compares with the level of between-person observed in influence ratings. Conspicuously absent in the available literature are any estimates of the size of random measurement error present in these types of rating scales such as might be obtained by readministering the instruments to the same informants a second time.

Virtually all of the research on influence examined here has relied on questionnaire items that depict the underlying decision process as consisting of a progression through a series of phases or stages, beginning with the recognition of a problem or need and ending with the selection of suppliers and/or evaluation of their performance. Even when such items refer to several specific stages, as was the case here, the measures obtained are quite global or general in the sense that an informant is asked to provide an overall assessment about the outcome for a particular stage, where the stage itself would ordinarily encompass a myriad of events and interactions distributed over time. The presumption that, somehow, global ratings about relative influence by decision phase ought to be reliable and valid needs to re-examined and would appear to be the appropriate point of departure for future efforts concerned with improving the quality of measures of organizational purchasing influence. The results obtained here indicating that influence ratings discriminated among roles but not decision stages might be interpreted as indicating that the task informants were asked to perform was excessive. In his discussion of the use of the informant technique in sociological research on organizations, Seidler (1974, p. 817) observed that informants "are often asked, at least implicitly, to perform calculations otherwise left for the computer." Referring to their work on response effects in survey interviews,

Cannell, Obsenberg, and Converse (1977) concluded that "The demands placed on the respondent by many survey questions are greater than generally has been realized, and the respondent's inability or unwillingness to meet these demands is a major source of invalidity." (p. 309). Some appreciation for the burden global influence questions place on respondents may be obtained by examining the nature of the influence processes described in intensive descriptive studies of purchasing decision-making like those done by Cyert, Simon, and Trow (1956) and Pettigrew (1975) and imagining the difficulties informants in those organizations would have in making judgments about the relative influence of different participants in various stages.[2] Those studies reveal that influence is exerted in a variety of complicated ways including through search and control of information, power relations, and negotiation. Patchen (1974) uncovered similar phenomena and emphasized the view of organizational purchase decision making as a "group process involving some kind of accomodation among individuals and units" (p. 155). In light of such studies, it would not appear that the kinds of influence processes that surround purchase decisions are easily related to hierarchical or multi-stage notions like the "buyphase" scheme proposed by Robinson, Faris, and Wind (1967) which is the conceptualization underlying most of the empirical research on influence measurement.

In order to assess influence, it would seem preferable to ask questions that relate to accomodation and other processes through which influence is manifested. Microtheoretical notions about social influence like those discussed by Bagozzi (1978) offer a starting point in conceptualizing the kinds of processes relevant here. However, descriptive studies involving intensive qualitative exploration of purchasing decisions (Calder 1977) would be required to develop instruments suitable for applications in survey research.

SUMMARY AND CONCLUSIONS

A review of previous research revealed that different informants within the same organization have generally been found to agree about who participates in purchase decisions but disagree in their assessments of the relative influence of those involved. It was noted that the participation measures which exhibited high consensus related to specific stages in the decision process while the divergent influence ratings were global measures referring to overall outcomes rather than particular phases. However, in the present investigation when judgments relating to expectations about the influence of four roles at three stages in the decision process were obtained, a low level of agreement was again observed between pairs of informants representing two types of decision participants, managerial personnel and users of the product. A multitrait-multimethod matrix analysis of the intercorrelations among the ratings suggested that the measures differentiated among roles but not decision stages. One possible source of poor measure discrimination that did not appear pronounced here was position bias.

It was suggested that the commonplace practice in industrial marketing research surveys (and employed here) of assessing influence through simple rating questions that relate to sequential stages in an idealized decision process may place such heavy, perhaps unrealistic demands on informants that there is little prospect for achieving a satisfactory level of reliability with such measures. If this conjecture were to be born out, then to obtain improved survey measures in this area, it would appear to be necessary to employ instruments that probe the kinds of processes through which influence in exerted. The handful of intensive investigations of influence in industrial purchasing that are available emphasize constructs like accommodation which do not fit neatly into

conceptualizations of a phased decision process. Such a re-orientation will require a substantial program of research to develop and evaluate new measurement methods beginning with the kind of "pick and shovel descriptive studies" called for by Bonoma, Zaltman, and Johnston (1977, p. 78) in their recent review of industrial buying behavior. In the meantime, as Wind (1978, p. 75) has recommended, assessments of purchase influence should be obtained from more than one informant within an organization so as to be able to detect instances of disagreement and avoid being unknowingly led to accept a misleading view of buying center composition.

FOOTNOTES

1. Approximations of the asymptotic variance of the coefficient, κ, are given in Bishop, Fienberg, and Holland (1975, pp. 397-398) but the small sample properties of the estimator appear not to have been studied. With the present sample size of only 25, the meaningfulness of asymptotic estimates is dubious and hence no assessment of the statistical significance of the coefficients presented in Table 3 was undertaken.

2. In private discussions of this subject, Lynn Phillips has pointed out that global ratings require informants to aggregate over many events and observations. He suggests that the aggregation informants perform is selective and the greater the aggregation required by a questionnaire item, the more opportunity there is for systematic and random error to enter into their reports and hence, the lower the level of inter-informant agreement obtained.

TABLE 1

SUMMARY OF STUDIES OF CONSENSUS IN PARTICIPATION AND INFLUENCE MEASUREMENT

Response	Purchase Decisions Investigated	Sample Size			No. of Informants Per Buying Group	No. of Roles Rated Per Informant	Participation			Influence		
		No. Buying Groups	No. Organizations	No. Respond.			Measure	Response Scale	Level of Consensus	Measure	Response Scale	Level of Consensus
Wiegand 1966	Inexpensive Fabricated Part	55	50	110	2	1	Specific 6 Product "Elements"	4 Point Scale	Low (Self-Informant)		--	--
McMillan 1973	3 Chemical Products	75	75	148	Varied (Mean = 2)	3	n.a.	n.a.	n.a.	Global	5 Point Scale	Low (Self-Informant)
Grashof Thomas 1976	Scientific & Technical Info.	171	171	274	Varied (Mean = 1-2)	3 Reported	n.a.	n.a.	n.a.	Specific (11 Stages)	Rank Order Several Positions	Low (Self-Informant)
Kelly 1974	Offset Press	18	18	48	Varied (Mean = 2-3)	Varied	Specific (5 Stages)	Open-Ended	High (Between Informant)	Global	Rank Order Decision Participants	?
Gronhaug 1977	Computer	16	16	n.a.	n.a.	n.a.	Specific (Several Stages)	Open-Ended	High (Between Informant)	n.a.	--	--
Patchen 1974	"Non-Repetitive Purchases" (Equipment & Material)	33	11	180	Varied (Mean = 5.5)	Varied	Specific (Several Stages)	Open-Ended	High (Self-Informant)	Global	Open-Ended	Low (Between Informant)
Choffray 1977	Solar Cooling System	12	12	24	2	8	(Specific 5 Stages)	Dichotomized Rating	High (Between Informant)		--	--
	Computer Terminal	13	13	26	2	7	(Specific 4 Stages)	Dichotomized Rating	High		--	--
Spekman 1976	21 "Commodity Classea" (Mfg. Mat'l. & Office Supplies)	52	20	322	Varied (Mean = 6)	1	Global	Multiple Items Rated on 5-Point Scale	Low (Between Informant)	Global	Multiple Items Rated on 5-Point Scale	Low (Between Informant)

Table 2

SUMMARY STATISTICS FOR MANAGERS' AND USERS' INFLUENCE RATINGS OF DECISION PARTICIPANTS BY STAGE

(n = 25)

Stage /Postition Rated	Median		Mode	
	Managers	Users	Managers	Users
Initiate Change				
Pressman	5	4	5	4
Platemaker	4	4	5	4
Foreman	5	4	5	5
General Manager	3	3	5	1
Evaluate Alternatives				
Pressman	4	2	5	2
Platemaker	4	3	4	2,4
Foreman	4	4	5	5
General Manager	4	4	5	5
Final Decision				
Pressman	3	3	3	2
Platemaker	2	3	2	2
Foreman	4	4	4	4
General Manager	4	4	5	5

Table 3

COEFFICIENTS OF AGREEMENT BETWEEN MANAGERS' AND USERS' INFLUENCE RATINGS OF DECISION PARTICIPANTS BY STAGE: DICHOTOMIZED VS. FIVE POINT SCALE RESPONSES

(n = 25)

Position Rated	Decision Stage					
	Initiate Change		Evaluate Alternatives		Final Decision	
	Dichot. Scale	5 Point Scale	Dichot. Scale	5 Point Scale	Dichot. Scale	5 Point Scale
Pressman	.39	.14	.23	.08	.53	.03
Platemaker	- .10	.09	.45	- .01	.39	.23
Foreman	.05	- .04	.01	.17	.00	.10
General Manager	.33	.17	.03	.06	.12	.14

Table 4

COMPARISON OF MANAGERS' AND USERS' INFLUENCE RATINGS OF DECISION PARTICIPANTS BY STAGE

(n = 25)

Stage/Position Rated	(Frequency)* M=U	M>U	M<U	Binomial Probability (2 tail test)
Initiate Change				
Pressman	7	12	6	.238
Platemaker	7	10	8	.814
Foreman	7	13	5	.096
General Manager	8	13	4	.050
Evaluate Alternatives				
Pressman	7	13	5	.096
Platemaker	5	13	7	.264
Foreman	10	8	7	1.000
General Manager	7	8	10	.814
Final Decision				
Pressman	5	8	12	.504
Platemaker	10	8	7	1.000
Foreman	8	10	7	.630
General Manager	9	8	8	1.000

M = Managers' Ratings
U = Users' Ratings

* For each row in the table, the sum of the three column frequencies is 25.

Table 5

INTERCORRELATIONS WITHIN MANAGERS' INFLUENCE RATINGS OF DECISION PARTICIPANTS BY STAGE*

(Q Values)

Managers' Ratings		Managers' Ratings											
		P			L			F			G		
		I	E	D	I	E	D	I	E	D	I	E	D
P	I	-											
	E	(.88)	-										
	D	(1.0)	(1.0)	-									
L	I	{.71}	.63	1.0	-								
	E	.20	{.81}	1.0	(.83)	-							
	D	.34	.45	{1.0}	(1.0)	(1.0)	-						
F	I	{1.0}	-1.0	1.0	{1.0}	1.0	1.0	-					
	E	-.56	{-.87}	-.37	-.46	{-.33}	.22	(1.0)	-				
	D	0.0	-.60	{1.0}	.11	-.60	{1.0}	(1.0)	(.85)	-			
G	I	{-.33}	.14	-.19	{-.47}	.14	-.34	{-1.0}	-.47	-.81	-		
	E	.14	{-.37}	-.29	-.63	{-.37}	-.14	1.0	{.86}	.60	(.50)	-	
	D	-.45	-.27	{-.55}	-.86	.05	{-.20}	-1.0	.63	{-.10}	(.71)	(1.0)	-

Managers' Ratings

* Notation Key:
P = Pressman
L = Platemaker
F = Foreman
G = General Manager
I = Initiate Change
E = Evaluate Alternatives
D = Final Decision

INTERCORRELATIONS BETWEEN MANAGERS' AND USERS' INFLUENCE RATINGS OF DECISION PARTICIPANTS BY STAGE*

INTERCORRELATIONS BETWEEN MANAGERS' AND USERS' INFLUENCE RATINGS OF DECISION PARTICIPANTS BY STAGE*
(Q Values)

Users' Ratings		Managers' Ratings: P I	P E	P D	L I	L E	L D	F I	F E	F D	G I	G E	G D
P	I	.73	(.67)	(.40)	{-.23}	-.03	-.08	{.48}	-.23	.33	{-.08}	.76	-.35
	E	(.45)	.54	(.93)	.35	{.54}	.81	1.0	{-.05}	1.0	.29	{.18}	-.18
	D	(.56)	(.86)	.90	.46	.86	{.71}	-.30	-.28	{-.11}	.14	.01	{-.01}
L	I	{.33}	-.14	.19	-.22	(.20)	(0.0)	{.22}	.14	-.53	{.64}	.71	.50
	E	.71	{.56}	1.0	(.86)	.78	(.88)	1.0	{-.01}	.10	-.14	{.05}	-.05
	D	.71	1.0	{.95}	(.66)	(1.0)	.73	-.48	-.20	{-.33}	.08	-.03	{.03}
F	I	{.14}	.01	-.37	{-.09}	-.64	-.47	.30	(-.09)	(.11)	{.82}	.33	.01
	E	-.14	{.05}	-.16	-.33	{.05}	-.20	(-1.0)	.01	(-.60)	.45	{-.05}	.37
	D	0.0	-.13	{.19}	-.56	-.45	{-.33}	(.22)	(.14)	0.0	.64	.45	{.20}
G	I	{-.33}	-.50	-.19	{-.14}	-.20	0.0	{-.22}	.22	0.0	.61	(.20)	(.45)
	E	-.45	{-.27}	-.16	-.33	{.05}	-.20	-1.0	{-.33}	-.60	(.71)	-.05	(.37)
	D	-.26	-.40	{-.05}	-.11	-.09	{-.07}	.04	-.11	{-.20}	(.56)	(.09)	.23

* Notation Key:
P = Pressman
L = Platemaker
F = Foreman
G = General Manager
I = Initiate Change
E = Evaluate Alternatives
D = Final Decision

Table 7

INTERCORRELATIONS WITHIN USERS' INFLUENCE RATINGS OF DECISION PARTICIPANTS BY STAGE*

(Q Values)

		Users' Ratings											
		P			L			F			G		
		I	E	D	I	E	D	I	E	D	I	E	D
	I	-											
P	E	(.11)	-										
	D	(.23)	(.96)	-									
	I	{.73}	.08	.14	-								
L	E	-.35	{.76}	.63	(.45)	-							
	D	-.02	.65	{.94}	(.33)	(.88)	-						
Users' Ratings	I	{.55}	-.05	-.58	{.71}	-.35	-.55	-					
F	E	-.03	{-.18}	-.01	.20	{-.05}	.03	(.63)	-				
	D	.45	.45	{-.14}	.61	.14	{-.45}	(.88)	(.88)	-			
	I	{-.08}	-.08	-.22	{.34}	-.13	-.33	{.82}	.89	.64	-		
G	E	-.03	{-.18}	-.01	.20	{-.37}	.03	.35	{.93}	.50	(1.0)	-	
	D	.25	-.06	{-.23}	.07	-.23	{-.59}	.54	.89	{.83}	(1.0)	(.97)	-

* Notation Key:
P = Pressman
L = Platemaker
F = Foreman
G = General Manager
I = Initiate Change
E = Evaluate Alternatives
D = Final Decision

Table 8

COMPARISONS OF CONVERGENT AND OTHER BETWEEN INFORMANT CORRELATIONS

Convergent Coefficients			Comparison Coefficients		
Role-Stage	Q Value	Fisher Exact Prob*	Same Role Diff. Stage	Same Stage Diff. Role	Different Stage Different Role
			(No. of Confirmations/No. of Comparisons)		
PI	.73	.06	4/4	6/6	11/12
PE	.54	.19	1/4	4/6	8/12
PD	.90	.01	3/4	5/6	11/12
LE	.78	.03	1/4	6/6	9/12
LD	.73	.06	2/4	5/6	10/12
Totals			11/20	26/30	49/60

* One tail probability.

Table 9

COMPARISONS OF CONVERGENT AND
WITHIN INFORMANT CORRELATIONS

Convergent Coefficient		Comparison Coefficients					
		Within Manager			Within User		
Role-Stage	Q Value	Same Role-Differ. Stage	Same Stage-Differ. Role	Differ. Stage-Differ. Role	Same Role-Differ. Stage	Same Stage-Differ. Role	Differ. Stage-Differ. Role
		(No. of Confirmations/No. of Comparisons)					
PI	.73	0/2	2/3	6/6	2/2	2/3	6/6
PE	.54	0/2	2/3	5/6	1/2	2/3	5/6
PD	.90	0/2	1/3	3/6	1/2	2/3	6/6
LE	.78	0/2	2/3	5/6	1/2	3/3	6/6
LD	.73	0/2	1/3	5/6	1/2	2/3	6/6
Totals		0/10	8/15	24/30	6/12	11/15	29/36

Table 10

SUMMARY OF MEDIAN CORRELATIONS*

Method (Informant)	Traits (Roles - Stages)		
	Same Role-Different Stage	Same Stage-Different Role	Different Stage-Different Role
Within Manager	1.0 (+0.5 ~ +1.0)	-0.15 (-1.0 ~ +1.0)	-0.07 (-1.0 ~ +1.0)
Within User	+0.88 (+0.11 ~ +1.0)	+0.14 (-0.59 ~ +0.94)	+0.01 (-0.58 ~ +0.89)
Between Manager & User:			
Above Diagonal	+0.29 (-0.60 ~ +0.93)	+0.04 (-0.33 ~ +0.82)	+0.22 (-0.53 ~ +1.0)
Below Diagonal	+0.56 (-1.0 ~ +1.0)	-0.06 (-0.33 ~ +0.95)	-0.16 (-1.0 ~ +1.0)
No. of Q Coef. Upon Which Each Median is Based	12	18	36

*Cell entries are the median Q values and the ranges are in parentheses.

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