Sensemaking from Actions: Deriving organization member's means and ends from their day-to-day behavior

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Sensemaking from actions: Deriving organization members'

means and ends from their day-to-day behavior

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Sensemaking from actions: Deriving organization members' means and ends from their day-to-day behavior

Abstract

This study presents a method to establish empirically what drives organization members in their day-to-day behavior. The method starts from the sense employees make of their own actions. The approach consists of two steps: qualitative laddering interviews to determine the most central means and ends that play a role in the sensemaking of organization members, and a follow-up survey to examine in depth the organizational means-end structure. The method was validated by relating the results to independently observed indicators of what guides organization members in their behavior. Apart from the deeper insight it provides in the forces that drive day-to-day behavior in an organization, the method also provides management with a practical tool for addressing employee motivation and for developing credible communication toward stakeholders.

Keywords:

Means-end analysis, laddering, sensemaking, organizational action, employee motivation

Introduction

What drives organization members in what they do?

This question has been intriguing to organization scholars and managers alike and there is a rich history of efforts to find the answer. Most approaches take the beliefs, attitudes, and values professed by organization members as their point of departure (Hofstede, Neuijen, Daval Ohayv & Sanders, 1990; Martin, Feldman, Hatch & Sitkin, 1983**;** Schultz, Hatch & Larsen, 2000)*.* We, however, think that *actions* of organization members reveal more about an organization than claims by top management or employees about what the organization is or should be. Performed actions may more accurately represent what drives organization members than do the statements and rhetorics of organization members (cf. Argyris & Schön, 1974). For instance, a booking clerk at an airline may sing the praises of 'customer-friendliness', but to listen patiently for twenty minutes to an agitated customer and then spend an hour trying to arrange a seat in an apparently fully-booked flight is a different thing. The observable action is what gives undeniable force to the statement of customer-friendliness (cf. Salancik: 1977, 4). If we are concerned with what keeps these actions going, we must pay attention to the sense people make of what they have done (Weick, 1995: 127).

In this paper we present a method for answering the question asked in the opening sentence of this paper. The method takes its point of departure in the actions of organization members. The sensemaking of individual organization members helps us to understand how shared collective knowledge structures develop and shape the actions they undertake (cf. Lyles & Schwenk, 1992). Insight into how organization

members make sense of their own behavior will provide a valuable tool to managers (Fiol, 1991: 192). It will help them search an organization's internal environment to identify important elements that might bear on future performance (Thomas, Clark & Gioia, 1993: 241) and provide a valuable aid in proactively positioning the organization toward its stakeholders (Gioia, Schultz & Corley, 2000: 75).

Outline of the paper

We will start with discussing the theoretical basis of our approach for assessing organization members' sensemaking from their own actions. We will argue how interactive sensemaking processes give rise to an overarching knowledge structure that encompasses the means and ends of the participating employees. We then will develop a method for assessing this structure empirically, and subject the method to a test of validity. We will show how this structure can credibly represent a group structure, even though individual employees may only be involved in part of the overall means-end structure. In the last section we will explain how the proposed method helps in finding solutions to organizational problems.

Actions and sensemaking: the theory underlying our approach

An interactive bond exists between what people do and the sense they make of it. Through their actions, individuals become bound to beliefs that sustain their actions and their own involvement. This makes the actions that people actually perform a good place to start our inquiry. The sense people make of their actions draws upon the ends sought, the conceptions of appropriate and effective means to those ends, and the cognitive structures which result from and are maintained by those actions (Weick,

1995: 126). A decision to act freezes one's motivational constellation for that action (Lewin, 1947: 336). This enhances organization members' inclination to stick to them and to repeat the actions at future occasions. The sense people have made of their previous actions will drive their day-to-day behavior in the organization. Actions thus pave the way cognitively for their own continuation (Weick, 1995: 156). The research method to be presented here will tap the traces of performed actions, providing empirical insight into what organization members choose to do for what purposes (cf. Huff, 1990: 14).

Immediately related to actions are the consequences of those actions. Consequences play a pivotal role in establishing organization members' commitment to what they have done (Staw, 1982: 102). Motivation to provide continuity to action is more likely to result from intended consequences than from unintended ones. The crucial question in sensemaking after action is, '*Is this what I want to have done?'* Actions and consequences not intended by organization members, at least not with hindsight, are not likely to have won their commitment. Therefore, these are not likely to incite them to repeat the same actions and to produce the same consequences again. An *end* is an intended consequence one or more organization members strive for. A *means* is an action or a consequence of a preceding action that the performer considers necessary to achieve the intended end. When people make sense of their own behavior, the consequences of an action are not given, but provided by their beliefs (cf. Salancik, 1977: 7). A means-end relation is a perceived causal relation, where the actor has intended both the cause and its consequence. It is the relation the performer believes to exist between both. Ends themselves are often means to more final ends (Simon, 1955: 62). The end in one means-end relation is the means to achieve another end in a

subsequent means-end relation. In Figure 1, for instance, 'action 1' is the means which serves the end of 'consequence 1'. 'Consequence 1' is in turn again a means in order to reach 'consequence 2'. This way, the connected means-end relations form a means-end chain or 'ladder' (Reynolds & Gutman, 1988). For ease of reading and reference, the means and ends included in these ladders will be referred to with the generic term 'concepts'.

Figure 1 about here.

A concept that is an important end in the eyes of organization members may be achieved with one particular action in one situation and a with a different action in another situation, depending upon the circumstances. Individuals may have to adapt their means according to those circumstances in order to reach the same end. Figure 2a shows means-end relations of one of the managers of the information technology company to be discussed later. This manager may invite one client to watch a tennis tournament together, and invite another client with different personal interests to participate in a golf clinic, in both cases with the same purpose of meeting the client outside of the normal business environment (Figure 2a). Similarly, depending upon the weather forecast, his boss will organize at one time a golf clinic and at another time a dinner (Figure 2b). In this way, ends that organization members strive for in different contexts are embedded in different means-end relations, which in turn may form part of different means-end chains. Consequently, the more means-end chains intersect at a given concept, the more often this concept is relevant in multiple contexts. Such a concept is more *connected* in organization members' means-end

structures. Pieters, Baumgartner, and Allen (1995) and Bagozzi and Dabholkar (2000) call a concept that is more connected with other concepts a more *central* concept.

Figures 2a and 2b about here

Intersection of Means-End Chains of Different Individuals

Interactions between organization members are not random, but guided by the ends that they serve (Morgeson & Hofmann, 1999). Each member contributes to the organization her or his own specific ends and specific means of achieving them (Bacharach, Bamberger & Sonnenstuhl, 1996). When people interact, their individual means-end chains can intersect in two ways: either as part of the delegation of tasks in the organization, or as complementary contributions by different employees to achieve a common end. Among the means to anyone's ends are the actions of others (Parsons, 1949: 235). Superiors delegate part of their task to subordinates (March & Simon, 1993). The subordinate's end forms one of the superior's means for achieving his own ends. The manager of Figure 3a, for instance, has as one of his ends 'bring in new ideas'. His boss has as means to his own end: 'let managers bring in new ideas' (Figure 3b). The manager whose means-end chain is shown in Figure 3a is one of these managers contributing to the bosses' end of 'maintaining contact with the client'. This is how subordinates' means-end chains are connected with their superiors' means-end chains (see Figure 3c).

Figure 3a, 3b and 3c about here

People's means-end chains mesh anywhere where they make contributions to a joint end. Each individual uses his expectation of what the actions of others will be in order to determine the consequences of his own actions (Simon, 1955: 71), and has a perception of what others expects from him. This allows individuals to subordinate their actions to the requirements of joint ends (Asch, 1952: 251). For example, the manager in the information technology company invites one of his clients to a golf clinic (Figure 4a). He can only do so safely, provided his colleague (Figure 4b) organizes that golf clinic. This way, their respective means-end chains intersect at the concept of 'building a network of relationships' (Figure 4c). Their own individual activities serve the joint, shared end of building up a network of relationships. These representations, and the actions that they allow for, bring group actions into existence and produce their continuity (Asch, 1952: 251). A pattern of interrelated activities emerges, which is relatively independent of the persons performing them (Weick & Roberts, 1993). Every organization member is only involved in part of the overall pattern. This makes it necessary to assess the contributions of different members, from different jobs in the organization, to come to grips with the overall pattern. We will now describe our method to investigate its content and structure.

Figures 4a, 4b and 4c about here

The method

In this section, we will describe the two-step method we developed for assessing the sense organization members make of what they do. The first step uses qualitative interviews to assess the means and ends that play a role in organization members'

sensemaking. The second step consists of a survey, which uses the output of the qualitative interviews and examines the complete pattern of relationships between the concepts that appear most prominently in the qualitative interviews. We will illustrate the method with an implementation at an information technology company.

First step: laddering interviews

The purpose of the first step is to establish the means and ends people draw upon in their sensemaking (cf. Weick, 1995: 126). Organization members from a broad variety of jobs at different levels in the organization should be interviewed. This way, maximum diversity in the organizational sensemaking can be tapped. Convergence in means and ends employed by several organization members provides an indication that these may apply to the whole organization. The open character of the interviews helps capture idiosyncratic concepts that may be unique to the organization.

Each interview starts by asking the respondent: 'What is your job?' This is a question that the interviewees can answer easily. However, respondents will describe what is expected of them, rather than what they actually do. Here, helpful questions are, 'What do you do in concrete terms?' or, 'Let's say, yesterday morning at 10 a.m., what did you do exactly?' If the respondent still doesn't bring clarity, the interviewer can insist by asking 'How should I picture this?' or 'How did you do that exactly?' until the respondent mentions an action performed of his or her own will. Then, the interviewer asks, 'Why do you do it this way?' The answer to this question reveals the end to which the action was a means. Each time the respondent gives an answer, the interviewer asks again, 'Why is this important to you?' This way, the interviewer tries to reconstruct the whole chain of means-end relations behind the action, repeating at

each answer again the question, 'Why is that important to you?' (Hinkle, 1965; Reynolds & Gutman, 1988). This last question is repeated time and again until the respondent is unable to give further answers. Then, the interviewer picks another concrete action, and starts the questioning again. This way, whole 'ladders' of means-end relations are uncovered. Therefore, Reynolds & Gutman (1988) labeled this interviewing technique the 'laddering technique'.

Figure 5 about here

This assessment procedure was applied at an information technology company with nine hundred employees. The relatively flat structure and homogeneity of the organization facilitated the reliance on a small sample. Basically, there were four main job categories: managers, assistant managers, project leaders, and consultants. We applied the laddering technique to a random sample of twenty-five respondents from the population of nine hundred employees. Care was taken that all job categories were included in the sample. The interviews were tape-recorded and typed out verbatim. From the transcribed text, means, ends, and means-end relations were established, using respondents' own wordings. Figure 5 shows the resulting means-end structure of one of the managers. The concepts at the bottom of the figure, the zero-level concepts, are only means to other ends. They do not serve as ends to any other means. The higher levels in the figures represent the number of means-end relations in the path from the actions at the bottom level up to the respective ends. If multiple paths exist, the length of the longest path is the decisive measure for the level in the figure. This assures that all lines in the figures can be read in an upward

direction as means-end relations, with the means as the lower level and the end as the

upper-level concept.

Figure 6 about here

Figure 6 gives an impression of the means-end structure for the whole organization,

based on interviews with 25 employees. It shows all relations between all concepts

that were mentioned by at least six different respondents – i.e., the cut-off level for

concepts is six, which means that a substantial number of respondents mentioned the

concept. The map was drawn according to the same principles as Figure 5. The

dilemma in making such comprehensive maps is how to make the cut-off level low

enough to include as much as possible of the information provided, yet not so low as

to yield a map so large and cluttered as to be incomprehensible (Bagozzi &

Dabholkar, 2000: 550). The map of Figure 7 better satisfies the latter goal. There, the

cut-off level for means-end relations was raised to three, at the cost of losing the detail

of Figure 6. The disadvantage of heightening the cut-off level for relationships is that

the coherence of the means-end structure for the organization is no longer visible. In

contrast to Figure 7, Figure 6 shows how the means and ends of different people

cohere. For instance, Figure 7 shows the concepts of 'assessing the problem' and

'solving problems'. These seem to have a means-end relation only with each other.

Figure 6, however, shows how they are embedded in the overarching network of

means-end relations.

Figure 7 shows 'bringing in orders' as possibly the most dominant concept in the

organization: it is the most highly connected concept here, and it serves as a goal to

most other concepts. In the end, organization members often seem to make sense of what they do predominantly in terms of 'bringing in orders'. This result, however, is based on a limited number of interviews, and the means-end relations upon which the whole structure is based were mentioned by only a few employees. The robustness and reliability of these results, therefore, based as they are only on relatively few qualitative interviews, need to be subjected to careful scrutiny.

Figure 7 about here

Reliability of the results of the qualitative interviews

A necessary condition for the use of the method we have just presented is the reliability of its results. A method which does not produce similar results under similar circumstances is limited in its usefulness for organizational decision making. To test the reliability of the laddering data, the split sample-reliability of the results was assessed. The sample of 25 employees was randomly split into two groups, one consisting of thirteen, the other consisting of twelve respondents. We then calculated the coefficient of agreement (Kassarjian, 1977), which basically measures to what extent a concept (or a relationship between two concepts) shows up in *both* half-samples. This analysis was performed for different cut-off levels. The starting point for this calculation was those concepts mentioned by at least six different respondents, i.e., the 54 concepts shown in Figure 6. Then each half-sample was checked for each concept to determine whether or not this concept appeared with a number of respondents corresponding to at least half of the cut-off level for the total sample. At different cut-off levels, the agreement between the two outcomes from the two half-samples was assessed by considering to what extent the concepts surviving the cut-off

level in one half-sample are the same as the concepts surviving the cut-off level in the other half-sample (see explanation in Table 1). The coefficient of agreement is the number of agreements, divided by the total number of judgments of both groups (Kassarjian, 1977). As Table 1 shows, at a cut-off level of 6, the split-sample agreement for concepts is 0.82, which can be considered fair. Heightening the cut-off levels lowers the reliability of the results. For both half-samples, also the agreement with respect to means-end relations was assessed (Table 1). Unlike the situation with concepts, with means-end relations, reliability does not nearly reach the value of 0.8 required by Kassarjian (1977). Thus the laddering technique seems reliable for establishing concepts, but much less so for means-end relationships.

Table 1 about here

Second step: assessing means-end relations in a survey

The laddering interviews provide a feasible and open way of assessing the concepts in the respondents' means-end structure. As the word 'ladder' implies, however, the laddering method is strongly vertically oriented towards tracking one single means-end chain up to the ultimate end. As a consequence, side connections, i.e., links to other concepts not within this one single ladder, are underexplored, and results from the laddering technique are likely to miss part of the potentially rich interconnectedness between the means-end chains. This may explain the lower split-sample reliability found for means-end relations from laddering interviews. Of course, if a larger number of employees would be interviewed, the resulting structure would become richer in terms of relationships between concepts. Then, however, a survey is

an easier and more thorough way to obtain the complete means-end pattern between the concepts. This takes us to step two of the method, the survey.

In step two we ask respondents explicitly about the relationships between individual concepts. To investigate thoroughly the pattern of relations between the results of laddering interviews, it would have been ideal if all 54 concepts of Figure 6 could be included in the survey. To do so, however, respondents would have had to consider all possible relations between them, i.e., 54 x 53 = 2862 relations, a lengthy undertaking. The literature so far does not offer clear-cut indicators of which part of means-end structures to select for more in-depth investigation. The higher-level concepts seem more general in scope (cf. Reynolds & Gutman, 1988), and therefore more apt to be included in an organization-wide survey than the often more job-specific lower-level concepts of Figure 6. In order to achieve an indication that organization members would recognize their own organization in the concepts selected, we let management have a voice in choosing where to cut off the number of concepts. We presented Figure 6 to the organization's top management on an overhead projector, with the whole figure covered except for the top level. We moved the covering sheet of paper slowly downwards. We told the managers to stop the sheet moving down as soon as they considered the range of visible concepts sufficient to uniquely identify their organization. This occurred when 'simplify the information flow', 'focus on a market', and 'keep each other informed' had been uncovered. Counting from the top, 24 concepts were visible, including these last three.

Going through all 24 x 23 = 552 possible relations between these 24 concepts might still prove rather tedious and time-consuming. Therefore, we distributed the questions

about means-end relations across three different versions of the questionnaire. Each respondent was confronted with eight concepts as means. They marked whether they agreed or disagreed with the existence of a means-end relation between each of these eight concepts as a means and each of the 23 other concepts as an end. Appendix I shows as an example the questions where one of the concepts, 'keep each other informed', figures as the potential means. We sent a questionnaire to every fourth employee to be found on an alphabetical list. Of the 248 questionnaires mailed to the employees' homes, 146 were returned (59 % response).

As for the demographic variables of job category and location, Chi-square tests showed no significant differences between the respondents of the three versions of the questionnaire, and we drew up the complete matrix of 24 x 23 means-end relations with the three versions of the questionnaire. This square matrix shows the concepts that serve as means in the rows and the concepts that serve as ends in the columns (see Appendix III). The numbers in the cells represent the proportion of respondents who agree with the proposed relation. As an example of how to read this matrix, consider cell (10,15) with the number 0.96. This number means that 96% of all respondents agree with the statement that 'bring in orders' is a means to 'make profit'.

In addition, a systematic (hierarchical) graphical representation of the means-ends structure can be derived from the survey results. This is somewhat less straightforward, however, than that from the laddering results, since loops can be detected in the data from this type of survey (cf. Bougon, Weick and Binkhorst, 1977). This is less likely if respondent agreement on the means-end relations is very high. We chose a level of agreement of 90 % as a cut-off threshold, implying that at

least 9 out of each 10 respondents had to agree with the proposed means-end relations.

Two loops existed at this cut-off level: one between 'being professional' and

'delivering quality', and one between 'employee commitment' and 'enjoy your work'.

These pairs of concepts, mutually implying each other, were therefore drawn at the

same level. Figure 8 shows the resulting means-end structure.

Figure 8 about here.

Figure 8 shows a picture different from Figure 7: in particular, 'being professional' and

'achieving a good result' appear as much more central concepts. 'Bringing in orders' is

still important, but less prominent than in Figure 7. The concepts have many more

connections, which also are much more reliable and robust. Whereas in Figure 7

connections were represented that had been mentioned by only three respondents, in

Figure 8 we know that each connection has been agreed upon by at least 90 % of all

respondents. In short, the information in Figure 8 is much richer and more reliable than

in Figure 7.

Reliability of the survey results

As we did earlier for the laddering results, we also established the reliability of the

survey results. When the questionnaires were returned, they were assigned a respondent

number in order of arrival. When dividing the questionnaires, one sample contained all

the odd numbers and the other all the even numbers. This way, possible systematic

differences between respondents who returned the questionnaire early and those who

returned it late could be ruled out. Mann-Whitney U-tests were performed on the means-

end relations which respondents had to rate. The null hypothesis was that there were no

significant differences between average ratings for each means-end relation for the odd- and the even-numbered respondents. Of all 24 x 23 = 552 relations, only 22 differed significantly (at the 5 % level) between the split populations. For nearly 96 % of all relations there was no significant difference. The correlation between the (average) agreements of the (24 x 23) relationships in the odd and the even half-sample amounted to 0.90. This is a large improvement in comparison to the reliability established for the relations in the qualitative sample (Table 1).

Validity of the survey results

The next question is, to what degree can the method developed be considered valid? Validity here concerns whether or not the methodology used was successful in capturing and representing the mental constructs that effectively guide organization members in their everyday behavior (Huff, 1990; Fiol & Huff, 1992; Walsh, 1995; Nicolini, 1999). To test this, we take as point of departure Weick's (1995: 156) observation that people build most meaning around those actions to which their commitment is strongest. Strong commitment goes together with more sensemaking and richer justifications (Weick, 1995: 159). We will examine these as they relate to our data.

We measure the centrality of a concept by its connectedness with other concepts. If a concept plays a central role in organization members' sensemaking, it is likely to be connected to other concepts in their means-end network, in which it becomes more solidly embedded. The connectedness of a concept is the average number of means-end relations which organization members perceive the concept to have. This is the sum of the relations in which that concept is the means to reach other ends, plus the

relations in which that concept is the end to other means. For each concept, this number is computed as the sum of the row and column entries of the matrix in Appendix III.

Table 3 gives the concepts (means and ends) that play a role in the actions of organization members as produced by our method, ranked according to centrality (measured by connectedness). If our method is valid, we would expect that the higher the rank of a concept is, the more organization members should be committed to it and the more it should guide them in their day-to-day behavior. In order to test convergent validity, we will relate the *centrality* of the concepts to the *commitment* to the same concepts as measured by the following indicators: importance, self-evidence, and working intensity. First we observe that as organization members are more committed to a concept, they are likely to perceive it as important. So we would expect a positive correlation to exist between importance and centrality of a concept. Note that we measure the centrality of a concept here by its connectedness with other concepts. Bagozzi and Dabholkar (2000) equate the number of connections of a concept in a means-end network with other concepts (which they call 'centrality') with 'importance'. A second indicator of commitment is the degree to which organization members consider a concept as a self-evident aspect of their work. As Weick (1988: 310) states: 'Once a person becomes committed to an action, and then builds an explanation that justifies that action, the explanation tends to persist and become transformed into an assumption that is taken for granted'. Therefore, we included a question asking the respondents how self-evident each of the concepts in the questionnaire was when doing their work at the information technology company. As a third indicator, we propose the degree to which respondents report they have

been working toward the realization of a concept. The more often individuals have performed a particular behavior, the more likely they are to have built commitment to it in retrospective sensemaking (Salancik, 1977). The scores of the concepts on these three scales were collected in a separate validation survey, which was held nine months after the first survey. The scores of the concepts on these commitment indicators were collected independently from the means-end information. This reliance on an independent survey, separate from the survey that assesses the means-end structure, helps us to minimize bias through common-method variance. Importance ratings were collected, along with the respondents' ratings of being self-evident and working intensity in the organization. Appendix II shows sample questions for all three kinds of ratings. We mailed 410 questionnaires to the employees' homes. 143 were returned (35 % response). In order to keep track of the different data collection occasions, Table 2 shows all the research steps undertaken in this research project.

Table 2 about here

Table 3 about here

Table 3 is a summary of the results. First, it gives the connectedness for each of the different concepts, both those derived from the survey data and from the laddering results. The concepts in this table have been ranked in descending order of connectedness as found in the survey data. In addition to connectedness, Table 3 also gives the levels at which the concepts appear in Figures 8 and 6, respectively. The three side columns farthest to the right show the mean scores of the concepts on the three indicators for commitment: importance, self-evidence, and working intensity. In

a factor analysis it turned out that these concepts loaded on one single factor, explaining 96 % of the variance (Table 4), which reflected organization members' commitment to these ends (Cronbach $\alpha = 0.97$).

Table 4 about here

In a Kolmogorov-Smirnov test, none of the variables in Table 3 turned out to have a distribution significantly different from the normal distribution, and therefore Pearson correlations could be used. We also calculated the correlations between the numbers of means-end relations in the qualitative and the quantitative research, in order to explore the link between structural characteristics of concepts in the qualitative research and in the quantitative research. Table 5 shows these correlations, which have been calculated taking the numbers of Table 3 as input.

The results of Table 5 are very interesting. Most importantly, Table 5 shows that the centrality of a concept as derived from the data in the first survey is highly correlated with the factor commitment and its three indicators, importance, self-evidence, and working-intensity. The scores for these indicators were collected in the separate validation survey. The correlation coefficients range from 0.80 to 0.91. This constitutes strong support for the validity of our method. We emphasized earlier that our method starts from the actions of the organization members. Apparently this action-driven means-ends method produces concepts that reflect the commitment of the organization members. The most central concepts obtained with this method are also the ones to which the organization members are most committed. A second conclusion from Table 5 is that we need the information from the survey in order to obtain insight into the means-ends relationships of the concepts. The connectedness

information from the laddering data is relatively weak. This is in agreement with our earlier finding of the low reliability of the means-end relations from the laddering data. The laddering interviews are most important for generating the concepts that are relevant for the organization members and the hierarchy of these concepts. A third conclusion from Table 5 is that commitment is much more strongly correlated with the *connectedness* (centrality) of a concept (r= 0.87) than with the *level* of a concept in the hierarchy of means and ends (r= 0.47). Apparently the concepts that are highest in the hierarchy are not necessarily the ones to which the members of a particular organization are the most committed. This may be explained by the fact that the "highest" concepts are relatively general, and are applicable to many organizations. For instance, 'define the information need', in the lower right corner of Figure 6, may be much more organization-specific than 'making profit' in the upper left corner of that same figure. Concepts somewhat lower than the top level are more in the center of the means-ends network, are more strongly connected to other concepts, and may well be more idiosyncratic to a specific organization. We shall come back to this later.

Discussion

In this paper we have proposed, implemented, and validated an action-oriented method to measure what drives organization members in their day-to-day behavior. The method takes its starting point in the actual behavior, producing (a) the most central means and ends, as they are perceived by the organization members, and (b) measures of their centrality (based on their connectedness with other concepts). Our approach has a number of unique advantages.

First, the method produces an overall structure, representing the means-end pattern of the whole organization, based on individual level data. We have found a way to rely on individual-level data, taking into account the links between cognition at the individual and collective level of analysis (Schneider & Angelmar, 1993). The method is able to account for the organization's effects on individual cognition, as it makes visible how envisaged joint ends guide the behavior of individual organization members (Asch, 1952; Morgeson & Hofmann, 1999). Conversely, it also takes into account the contribution of each individual to group level effects, such as the realization of joint goals by means of diverse individual contributions. In this sense, we build a bridge between individual level data and organizational level conclusions.

Every organization member may have his or her own idiosyncratic means-end ladders, which may have only a limited number of "hinge points" with ladders from others. Furthermore, the means and the ends that are shared by the means-end chains of more than one individual can have different meanings for each of these individuals (Bougon, 1992; Weick, 1995: 120; cf. Figures 3a, 3b, and 3c). Instead of an a priori assumption, in this methodology the degree of sharing has become an empirical question.

Second, the laddering technique offers a natural transition from the action itself ('what did you do exactly?') to the cognitions used to make sense of it ('why do you do it this way?') and to the further going justifications ('why is this important to you?'). This feature of the laddering technique makes it possible to establish the more stable cognitions behind organization members' actions. As the answers provided by the laddering-interviews are based upon actions performed in the recent past, we have an

indication that the answers may represent the respondents' 'theory-in-use', i.e., the theory that actually governs their actions. This in contrast to their 'espoused theory', the theory to which they give allegiance and which they communicate upon request (Argyris & Schön, 1974: 7).

A third important advantage of the method developed here is its openness to elements particular to the investigated organization. The laddering technique allows the researcher to approach the organization without any preconception of actions, goals, or values in mind. This makes the method suitable for establishing orientations for action where the researcher should be open for organization-specific elements.

Limitations and Further Research

The study we have discussed has been a first implementation of this technique, as well as its first validation. So far one organization has been studied, though with very encouraging results. The information technology company had a limited number of hierarchical levels, with well-defined job responsibilities and a relatively high degree of formalization. In other organizations it might be more difficult to find unifying elements that are so central in their means-end structure. A further limitation concerns the transition from the qualitative to the quantitative research, in particular the decision about which of the concepts derived from the laddering interviews to take along in the survey. Our solution of using the overhead projector in a session with managers to cut off the number of concepts was a practical one. It may well be, however, that it is neither the top concepts from the hierarchical structure, nor the bottom concepts, but rather the concepts in the middle that are the employees' most specific driving forces, and the most characteristic for a particular company. The top

may be too general, as many of these may be found in any company. The bottom is too much oriented towards operational goals of individual organization members. This implies that, in order to find the means-ends structure of a particular organization, one should concentrate on the middle-range of the concepts in the hierarchy. More work needs to be done here.

Contribution to organizational research

The salience of the concepts that appeared to be highly connected in this study, in terms of means-end relations, might play a promising role in further organizational research. These concepts are 'central' in different senses: 'central' in the sense that they have many means-end relations, and central in the sense that they are important (Bagozzi & Dabholkar, 2000). Lyles and Schwenk (1992) argue that an organizational knowledge structure consists of central and peripheral aspects that roughly relate to a set of shared ideas about the organization's ends and means of achieving those ends. Even though these central aspects may have different meanings to different individuals within the organization, the most connected concepts may serve as a sort of best summary of what the organization stands for in daily practice. Simon (1955: 63) already pointed out that the structure of means and ends is as characteristic of the behavior of organizations as it is of individuals.

A specific issue is the question regarding the link between the central concepts found with the research method presented here and the identity of an organization (Fiol & Huff, 1992). However, the link between the sense organization members make of what they do and how they perceive an organization's identity has as yet hardly been addressed in literature (Gustafson, 1998). The method developed in our study might

be used to relate what drives organization members' behavior to how they perceive their organization's identity, or the identity of the different groups within the organization (Pratt & Foreman, 2000).

Further applications may extend to theories investigating what underlies the course of action organizations take. Collins and Porras (1996) investigated core values underlying the strategy of an organization. They describe core values as the 'central and enduring tenets of the organization'. This conception of core values fits in well with the sensemaking perspective of the method demonstrated here. Such values provide organization members with the criteria to choose both their ends and the means by which they prefer to achieve them (Pant & Lachman, 1998: 200). Interesting questions for further research would be whether the elements most central in the means-end structure correspond to these core values, and how enduring they may be.

The logic of reasoning, in which these most central concepts are embedded, may also correspond to by Prahalad and Bettis' (1986) concept of 'dominant logic'. They see dominant logic as resulting from the reinforcement of behaviors which have led to success in past. Means-end relations reflect, at least in part, past successes. They show which means organization members believe they need in order to reach their goals. As far as means-end relations are concerned, Figure 8 might reflect the dominant logic of the information technology company investigated here. To what degree this means-end structure covers the organization's dominant logic, however, remains a question for future research.

Practical use of the results

It is clear that knowledge of the sensemaking processes underlying employees'

behavior is important for management. If new ways of doing things are to be

introduced, these will be more easily accepted when they can be linked to the most

central (i.e., most connected) existing means and ends. On the negative side, the

method can also help to focus management's attention on those ends that are most

resistant to change – those with most means-end relations. The means-end relations of

these driving forces simultaneously explain *why* these are the ends that are most

difficult to change, indicating how management may wish to communicate about

them with their employees.

 Knowledge as to what drives the members of their own specific organization enables

management to motivate employees more effectively and therefore may help the

organization realize its strategic goals (cf. Gioia & Chittipeddi, 1993). The

management of the information technology company where the application described

here took place was interested in using the results for both internal as well as external

purposes. Internally, it wanted to come to grips with what motivated employees.

Inspection of the results taught management that 'bringing in orders' had become by

far too prominent in employees' orientation toward their daily work. Even if the

qualitative results are less reliable than the quantitative results, the prominence of that

end in Figures 6 and 7 led management immediately to revise the reward structure,

with more emphasis on profitability and client satisfaction and somewhat less on

'bringing in new business'. For external purposes, the results formed the basis for

positioning the organization toward its external stakeholders. It introduced a new

corporate advertising campaign in which the organization's professionalism was

stressed along with its propensity to achieve good results, completely in accordance with the spirit of the results presented in Table 3 and Figure 8. The pay-offs of the method have given rise to subsequent practical applications of the method to companies in the housing and in the energy sector, in situations where either the organization was in a process of organizational transformation or when management wanted to develop a new positioning strategy toward stakeholders.

If the means that employees use and the ends that they work towards are in line with what management wants to realize, these can be a valuable asset for communication with stakeholders. They may also be fruitful themes in positioning the organization towards important client groups (Van Riel, 1995). Organizational communication is particularly convincing if stakeholders see that employees are demonstrating the very themes that the organization claims. For instance, clean-cut, friendly, and well-mannered drivers have solidified UPS' image as one of the most reliable trucking companies in the world (Elsbach & Glynn, 1996). If employees see their own means and ends expressed in organizational communication, this can in turn considerably enhance employee commitment to the organization (Salancik, 1977), which in turn results in positive word-of-mouth from employees to their contacts outside the organization (Kennedy, 1977). Such communication will in the long run enhance the organization's reputation and organization members may feel more comfortable if they can believe their own PR (Elsbach & Glynn, 1996).

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APPENDIX I: EXAMPLE QUESTIONS FROM THE PROPOSED SURVEY

At your work at XXX-company **KEEPING EACH OTHER INFORMED ABOUT WHAT IS HAPPENING** is important in order to:

	RIGHT	**WRONG**
- motivate people	0	0
- achieve a good result	0	0
- enjoy your work	0	0
- solve problems	0	0
- satisfy the client	0	0
- reach your goal	0	0
- recruit internally the people for a project	0	0
- simplify the information flow	0	0
- focus on a specific market	0	0
- be committed to your work	0	0
- keep in touch with the client	0	0
- make profit	0	0
- bring in orders	0	0
- be creative	0	0
- submit offers	0	0
- work together with colleagues from XXX-company	0	0
- foster togetherness	0	0
- be professional	0	0
- deliver quality	0	0
- think in the long term	0	0
- deliver value added	0	0
- establish the problem	0	0
- be asked for by the client	0	0

APPENDIX II EXAMPLE QUESTIONS FROM THE VALIDATION SURVEY

Questions in the validation survey regarding the concept of 'keeping each other informed about what is happening'

I   Ratings of importance

Could you please indicate how important each of the following aspects is **when you are doing your work at XXX-company?**

1= completely unimportant, 2 = unimportant, 3 = somewhat unimportant, 4 = not important, not unimportant, 5 = somewhat important, 6 = important, 7 = very important

	COMPLETELY UNIMPORANT					**VERY IMPORTANT**	

- keep each other informed about what is happening   1   2   3   4   5   6   7

II   Ratings of self-evidence

Could you please indicate at the following questions how self-evident each of the following aspects is **when you are doing your work at XXX-company?**

1= absolutely not self-evident, 2 = not self-evident, 3 = not really self-evident, 4 = not self-evident, but not the reverse either, 5 = somewhat self-evident, 6 = self-evident, 7 = completely self-evident

ABSOLUTELY   COMPLETELY
NOT SELF-EVIDENT   SELF-EVIDENT

- keep each other informed about what is happening   1   2   3   4   5   6   7

III   Ratings of working-intensity

Could you please indicate to what degree you agree with the following proposition:

AT MY WORK AT XXX-COMPANY, I'M WORKING VERY INTENSIVELY ON

1= completely disagree, 2 = disagree, 3 = disagree somewhat, 4 = do not disagree, do not agree, 5 = agree somewhat, 6 = agree, 7 = completely agree

COMPLETELY   COMPLETELY
DISAGREE   AGREE

- keeping each other informed about what is happening   1   2   3   4   5   6   7

APPENDIX III: Matrix of means-end relations in the first survey at the information technology company

The rows represent the concepts as means. The columns represent the concepts as ends. The numbers in the cells represent the proportion of respondents agreeing with the proposed means-end relation between each pair of concepts. The numbers of the concept correspond to the rank order numbers in table 3.

concept	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1 be professional	0.00	1.00	1.00	0.96	0.68	0.81	0.98	0.66	0.94	0.89	0.70	0.79	0.89	0.43	0.87	0.51	0.51	0.60	0.79	0.32	0.62	0.21	0.38	0.19
2 achieve a good result	0.70	0.00	0.75	0.81	0.83	0.89	0.98	0.64	0.64	0.81	0.42	0.43	0.58	0.57	0.87	0.32	0.28	0.34	0.62	0.28	0.26	0.13	0.36	0.15
3 deliver quality	0.94	0.98	0.00	0.94	0.81	0.75	1.00	0.60	0.87	0.92	0.25	0.57	0.57	0.38	0.85	0.34	0.09	0.25	0.83	0.25	0.42	0.09	0.30	0.26
4 reach your goals	0.74	0.93	0.80	0.00	0.48	0.78	0.87	0.67	0.70	0.83	0.30	0.43	0.70	0.40	0.85	0.35	0.15	0.35	0.65	0.24	0.30	0.17	0.22	0.09
5 motivate employees	0.87	0.98	0.91	0.96	0.00	0.89	0.81	0.83	0.81	0.68	0.49	0.51	0.81	0.96	0.72	0.66	0.64	0.38	0.40	0.55	0.38	0.11	0.15	0.45
6 enjoy your work	0.72	0.89	0.80	0.83	0.98	0.00	0.61	1.00	0.67	0.61	0.57	0.35	0.63	0.85	0.50	0.93	0.50	0.33	0.67	0.61	0.20	0.24	0.26	0.35
7 satisfy the client	0.72	0.87	0.72	0.89	0.43	0.74	0.00	0.57	0.74	0.77	0.64	0.57	0.43	0.32	0.74	0.26	0.26	0.38	0.87	0.13	0.40	0.17	0.19	0.13
8 job involvement	0.77	0.94	0.89	0.91	0.89	0.94	0.72	0.00	0.77	0.66	0.68	0.49	0.66	0.66	0.55	0.72	0.43	0.55	0.51	0.28	0.36	0.09	0.21	0.30
9 offer surplus value	0.75	0.79	0.79	0.68	0.49	0.70	0.92	0.42	0.00	0.85	0.23	0.53	0.34	0.23	0.68	0.36	0.09	0.17	0.81	0.15	0.43	0.15	0.17	0.11
10 bring in orders	0.49	0.51	0.40	0.68	0.72	0.64	0.17	0.47	0.43	0.00	0.40	0.55	0.09	0.43	0.96	0.32	0.15	0.17	0.40	0.28	0.42	0.25	0.04	0.25
11 maintain contact with clients	0.87	0.91	0.89	0.76	0.46	0.41	1.00	0.54	0.91	0.96	0.00	0.83	0.89	0.17	0.65	0.46	0.52	0.91	0.91	0.11	0.78	0.52	0.43	0.09
12 think in the long term	0.93	0.78	0.87	0.74	0.59	0.37	0.65	0.50	0.85	0.89	0.54	0.00	0.46	0.26	0.80	0.24	0.17	0.41	0.67	0.09	0.50	0.67	0.41	0.07
13 solve problems	0.51	1.00	0.72	0.91	0.55	0.58	0.94	0.40	0.58	0.57	0.25	0.21	0.00	0.45	0.47	0.47	0.15	0.47	0.53	0.13	0.21	0.04	0.26	0.06
14 togetherness	0.52	0.87	0.65	0.80	0.89	0.85	0.48	0.80	0.63	0.46	0.35	0.30	0.72	0.00	0.52	0.43	0.89	0.37	0.26	0.87	0.26	0.11	0.11	0.54
15 make profit	0.45	0.55	0.47	0.57	0.81	0.72	0.17	0.53	0.38	0.43	0.06	0.68	0.09	0.47	0.00	0.28	0.09	0.06	0.26	0.09	0.30	0.11	0.04	0.11
16 creativity	0.61	0.87	0.70	0.78	0.61	0.83	0.74	0.54	0.89	0.87	0.17	0.63	0.98	0.28	0.65	0.00	0.09	0.59	0.63	0.20	0.67	0.09	0.52	0.26
17 keep each other informed	0.79	0.85	0.87	0.70	0.91	0.79	0.55	0.87	0.83	0.68	0.79	0.62	0.85	0.96	0.43	0.47	0.00	0.57	0.26	0.62	0.45	0.13	0.28	0.40
18 assess the problem	0.77	0.94	0.83	0.91	0.43	0.51	0.85	0.38	0.74	0.62	0.43	0.43	1.00	0.23	0.49	0.47	0.17	0.00	0.60	0.15	0.57	0.11	0.53	0.13
19 be asked for by clients	0.28	0.33	0.35	0.48	0.46	0.65	0.48	0.54	0.41	0.87	0.61	0.37	0.28	0.11	0.61	0.15	0.07	0.39	0.00	0.04	0.70	0.24	0.07	0.11
20 cooperation with peers	0.62	0.74	0.79	0.60	0.40	0.62	0.45	0.55	0.70	0.53	0.53	0.36	0.66	0.83	0.53	0.40	0.85	0.47	0.17	0.00	0.40	0.23	0.28	0.38
21 submit offers	0.47	0.49	0.38	0.72	0.34	0.32	0.42	0.26	0.28	0.98	0.47	0.47	0.19	0.21	0.75	0.25	0.11	0.23	0.64	0.23	0.00	0.25	0.02	0.04
22 focus on a market	0.63	0.70	0.65	0.46	0.15	0.17	0.65	0.39	0.72	0.76	0.76	0.67	0.46	0.26	0.65	0.22	0.22	0.61	0.78	0.11	0.43	0.00	0.30	0.11
23 simplify the information flow	0.58	0.68	0.68	0.32	0.32	0.28	0.60	0.11	0.53	0.32	0.23	0.42	0.53	0.13	0.28	0.28	0.19	0.26	0.25	0.11	0.19	0.02	0.00	0.06
24 internal recruitment	0.45	0.45	0.57	0.57	0.43	0.19	0.30	0.23	0.43	0.36	0.21	0.21	0.28	0.66	0.43	0.15	0.40	0.15	0.13	0.60	0.23	0.04	0.11	0.00

TABLE 1   Split Sample agreements for laddering data

Object of assessment	Cut-off level for the whole sample	Cut-off level for each half of the split sample	Coefficient of agreement[a b] between both groups
Concepts	6	3	0.82
	8	4	0.72
	10	5	0.79
	12	6	0.62
Means-end	2	1	0.55
relations	4	2	0.43

a   Kassarjian's coefficient of agreement:

$$\text{Agreement} = 2 * \frac{\text{number in both half sample A as well as in half sample B}}{\text{Total number in half sample A + total number in half sample B}}$$

b   The number of concepts or relationships in each half sample is the number surviving the respective cut-off level. The agreements are those concepts, which survive simultaneously the cut-off levels in both half samples

TABLE 2   **Overview of the research steps**

	Research step	Method	N	Questions asked
Proposed method	Step 1	Laddering interviews	25	Laddering interview questions
	Step 2	Survey	146	Means-ends relations (in 0-1 format) (see Appendix I)
Validation survey	Validation	Validation survey (second survey of the example research)	143	Ratings of - importance - self-evidence - working-intensity (see Appendix II)

TABLE 3 Structural measures and respondent ratings of the concepts included in the first and validation survey

rank	Concept	survey results[a]		laddering results[a]		validation survey results: scores on items		
		connected-ness[e]	level[b]	connected-ness	level[c]	Importance[d]	self-evidence[d]	working intensity[d]
1	be professional	30.91	2	3	16	6.35	6.38	6.35
2	achieve a good result	30.71	4	9	15	6.48	6.37	6.45
3	deliver quality	29.74	2	25	13	6.66	6.41	6.43
4	reach your goals	28.98	3	12	15	6.14	5.97	6.05
5	motivate employees	28.61	1	6	12	5.84	5.51	5.49
6	enjoy your work	28.53	0	8	11	6.27	5.50	5.82
7	satisfy the client	27.28	5	11	14	6.54	6.34	6.31
8	job involvement	26.48	0	11	8	6.16	6.14	6.14
9	offer surplus value	26.29	3	4	8	6.08	6.09	5.80
10	bring in orders	25.54	3	25	15	5.41	4.58	4.03
11	maintain contact with clients	25.06	0	14	8	5.96	5.97	5.64
12	think in the long term	23.88	0	4	14	5.77	5.43	5.30
13	solve problems	23.55	2	16	12	6.01	6.02	5.76
14	togetherness	22.93	2	4	10	5.28	5.06	4.96
15	make profit	22.57	4	7	14	5.81	5.44	4.81
16	creativity	22.24	1	10	10	5.82	5.66	5.56
17	keep each other informed	21.69	0	7	7	5.63	5.63	5.16
18	assess the problem	21.30	1	11	8	5.96	5.64	5.38
19	be asked for by clients	21.24	1	7	15	-	-	-
20	cooperation with peers	18.53	0	8	9	5.03	5.07	5.04
21	submit offers	18.00	0	8	14	4.46	3.91	3.24
22	focus on a market	15.03	0	13	7	4.10	3.71	3.69
23	simplify the information flow	13.01	0	1	7	4.58	3.98	4.92
24	internal recruitment	12.22	0	7	12	4.20	3.51	3.26

a   Measures are calculated from the means-end relations of the concepts

b   This level refers to the level at which the concept appears in Figure 8

c   This level refers to the level at which the concept appears in Figure 6

d   The measures from the validation survey are the averages over respondents

e   Connectedness for the quantitative results is calculated as the sum of the column and row entries belonging to that concept, in the matrix shown in the appendix.

        Concepts are ranked in order of connectedness calculated from the survey results, with the most connected concept first and the least connected concept last

Table 4   Factor loadings on the validation items

Factor identified	*Factor*
Importance	0.96
Self-evidence as aspect of own work	0.98
Working intensity	0.94

TABLE 5

Pearson correlations between network measures and survey items

		laddering results		survey results		validation survey ratings		
		connectedness	level	connectedness	level	importance	self-evidence	working intensity
laddering	connectedness							
	level	0.25^b						
survey	connectedness	0.26^b	$0.44*^b$					
	level	0.21^b	$0.51**^b$	$0.53**^b$				
validation	importance	0.23	0.31	0.91***	0.53**			
survey	self-evidence	0.17	0.19	0.86***	0.48*	0.96***		
	working intensity	0.07	0.11	0.80***	0.39	0.91***	0.94***	
commitment (composite measure)		0.16	0.19	0.87***	0.47*	0.98***	0.99***	0.97***

- * correlation significant at 5 % level   a: N = 54 concepts

- ** correlation significant at 1 % level   b: N = 24 concepts

- *** correlation significant at 1 ‰ level All significances in this table are 2-sided. N = 23 concepts, unless otherwise indicated

Consequence 2

Consequence 1

Action 1
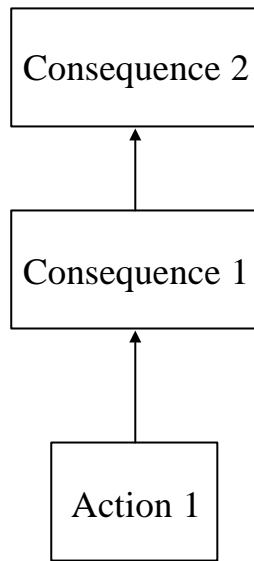
Figure 1: basic means-end chain

Varying means for constant ends

```
        ┌─────────────────┐                         ┌─────────────────┐
        │  Meet the client │                         │   Build up a    │
        │  outside of the  │                         │   network of    │
        │    business      │                         │  relationships  │
        │   environment    │                         │                 │
        └─────────────────┘                         └─────────────────┘
           ↑         ↖                                  ↗          ↖
    ┌──────────┐   ┌──────────┐               ┌──────────┐   ┌──────────┐
    │ Invite client│ │ Take client│             │  Organize  │ │  Organize  │
    │ to the ABN  │ │   to a     │             │  a golf    │ │  a dinner  │
    │   tennis    │ │ golf clinic│             │   clinic   │ │            │
    │ tournament  │ │            │             │            │ │            │
    └──────────┘   └──────────┘               └──────────┘   └──────────┘
```
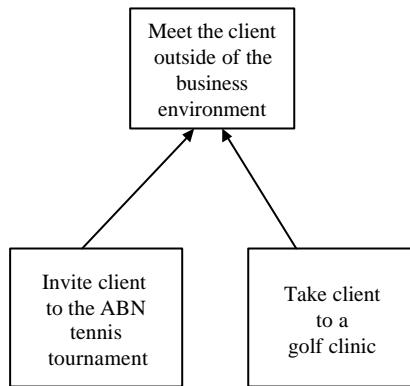
Figure 2a   **Figure 2b**

Varying perceptions   Varying weather conditions

about what client likes

Superior-subordinate delegation in joint means-end structure

```
                                    ┌ ─ ─ ─ ─ ─ ┐             ┌ ─ ─ ─ ─ ─ ┐
                                    │  Maintain │             │  Maintain │
                                    │  contact  │             │  contact  │
                                    │with the client│          │with the client│
                                    └ ─ ─ ─ ─ ─ ┘             └ ─ ─ ─ ─ ─ ┘
                                          ▲                         ▲
   ┌───────────┐                    ┌ ─ ─ ─ ─ ─ ┐            ┌───────────┐
   │  Bring in │                    │Let managers│           │  Bring in │
   │    new    │                    │  bring in  │           │    new    │
   │   ideas   │                    │  new ideas │           │   ideas   │
   └───────────┘                    └ ─ ─ ─ ─ ─ ┘            └───────────┘
         ▲                                                         ▲
   ┌───────────┐                                            ┌───────────┐
   │ Keep up to│                                            │ Keep up to│
   │    date   │                                            │    date   │
   └───────────┘                                            └───────────┘
         ▲                                                         ▲
   ┌───────────┐                                            ┌───────────┐
   │ Know more │                                            │ Know more │
   │   about   │                                            │   about   │
   │your clients│                                            │your clients│
   └───────────┘                                            └───────────┘
         ▲                                                         ▲
 ┌─────────────┐                                          ┌─────────────┐
 │   Meet the  │                                          │   Meet the  │
 │client outside of│                                       │client outside of│
 │business environment│                                    │business environment│
 └─────────────┘                                          └─────────────┘
         ▲                                                         ▲
   ┌───────────┐                                            ┌───────────┐
   │ Invite the│                                            │ Invite the│
   │  client to│                                            │  client to│
   │a sailing festival│                                      │a sailing festival│
   └───────────┘                                            └───────────┘
```

Figure 3a

Means-end chain

of a manager
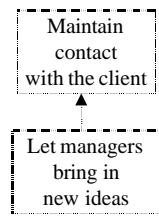
Figure 3b
Means-end chain
of a member of
the board of directors
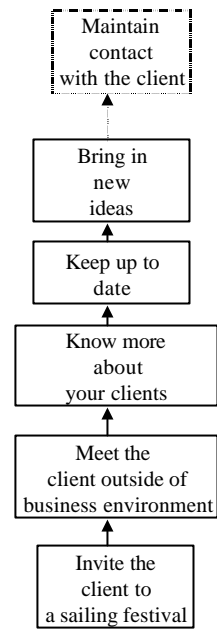
Figure 3c

Joint means-end structure with
delegation

How different individuals' means-end chains intersect: joint tasks

Keep up to date		
↑		
Build up network of relationships		
↑		
Take the client to a golf clinic		
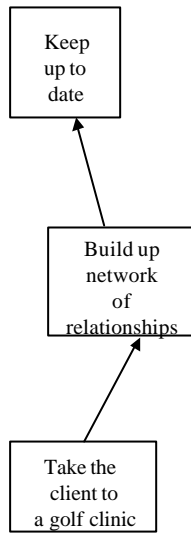
Figure 4a

Means-end chain

of a manager

Maintain contact with the client

Build up network of relationships

Organize a golf clinic
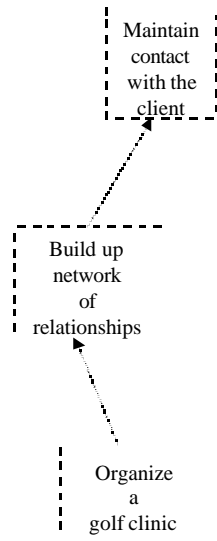
Figure 4b

Means-end chain
of his colleage

Keep up to date

Maintain contact with the client

Build up network of relationships

Take the client to a golf clinic

Organize a golf clinic
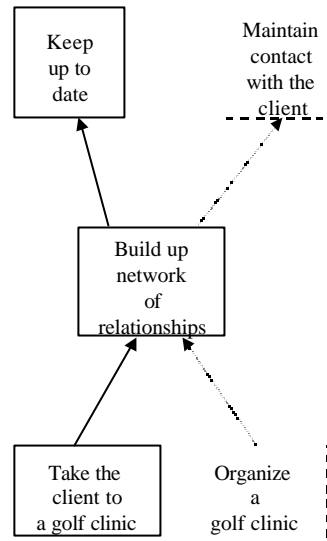
Figure 4c

Joint means-end structure
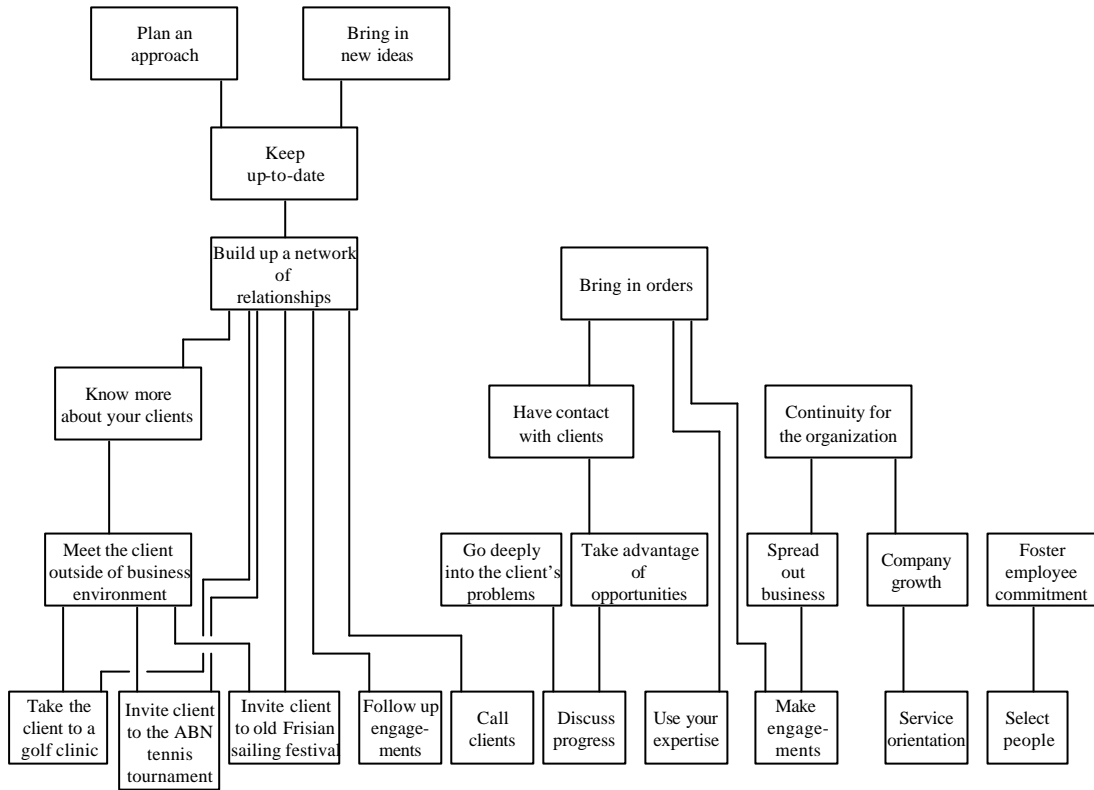
Figure 5   Means-end structure of one of the interviewed managers
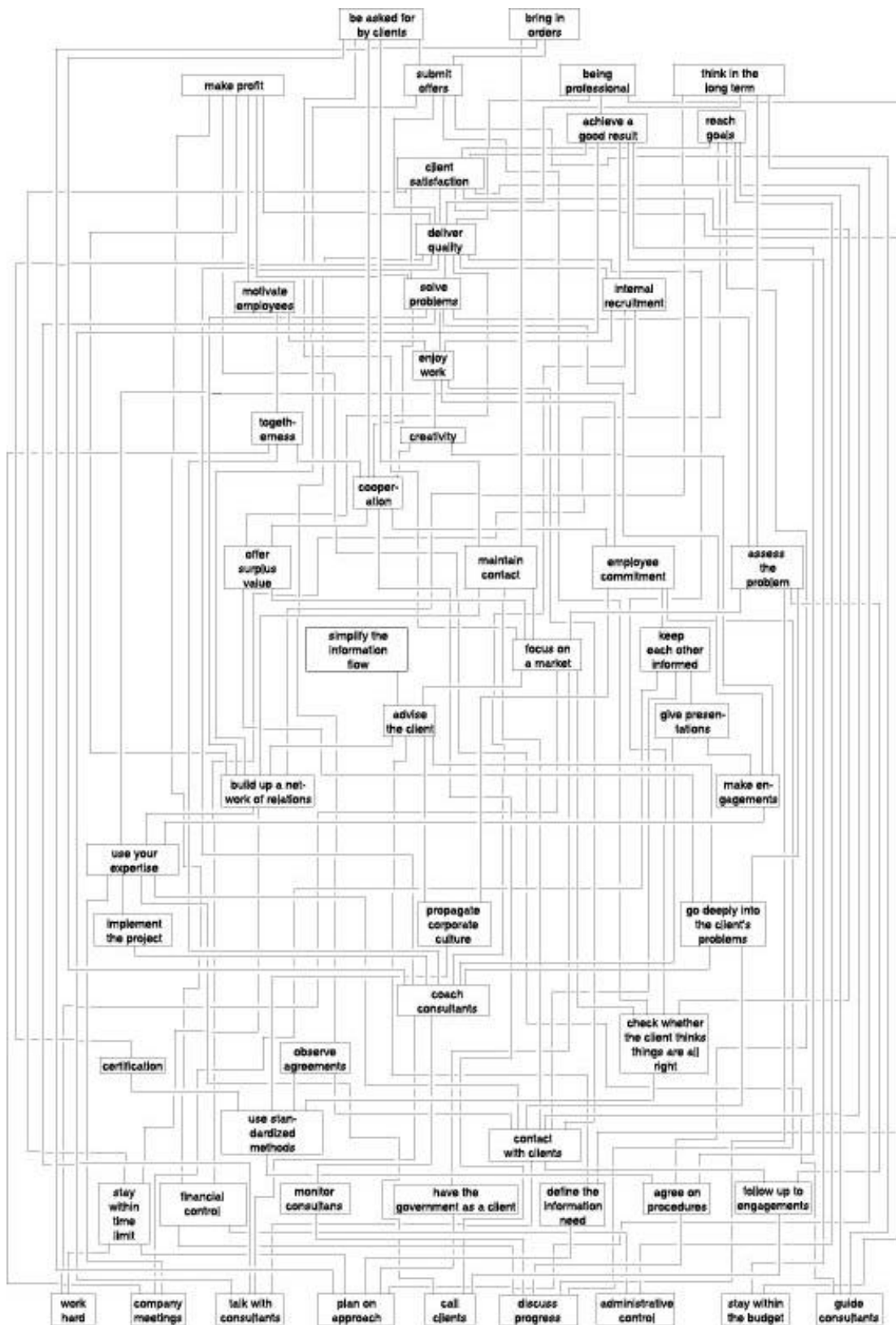
Figure 6   Laddering results (cut-off level concepts = 6, cut-off level relations = 1)
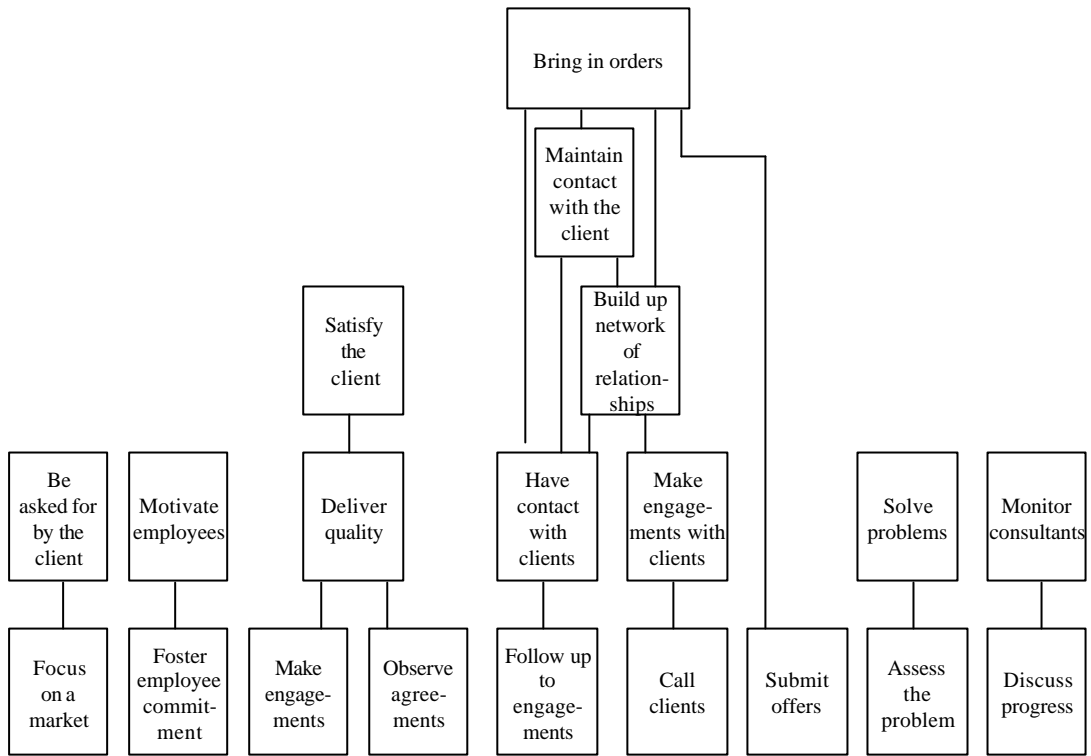
Figure 7   Laddering results (cut-off level concepts = 6, cut-off level relations = 3)
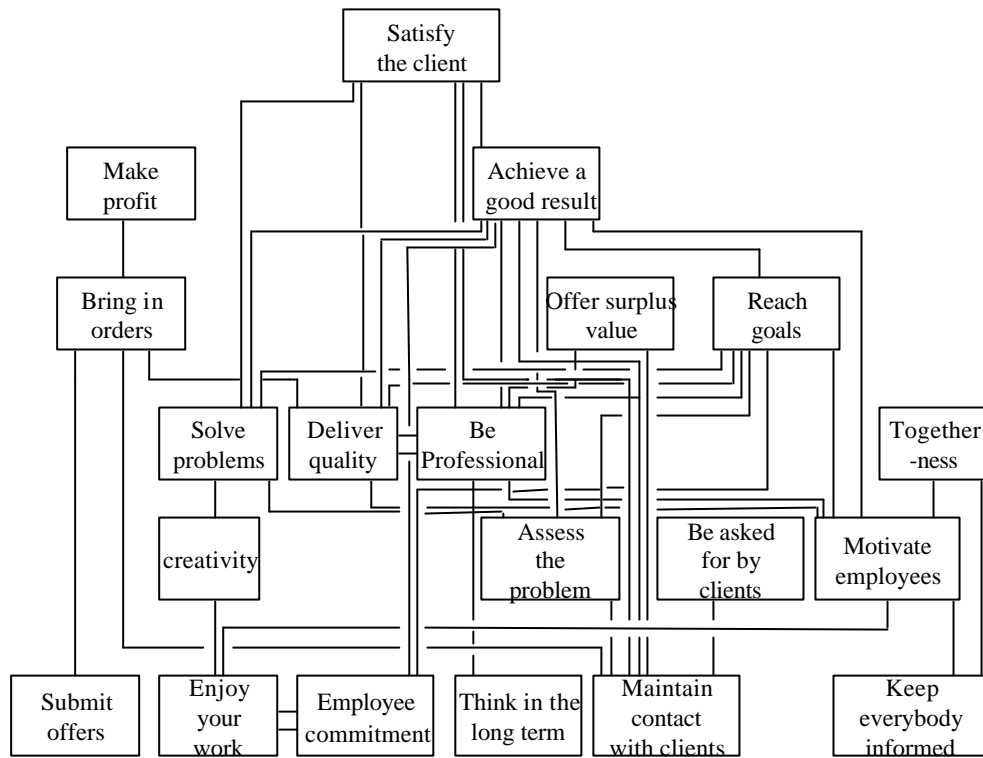
Figure 8   Means-end structure defived from the quantitative survey (cut-off level for relationships: 90 % agreement on the existence of the relationship among respondents)

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