

**THE USE OF INFORMATION IN ORGANIZATIONS:
A COGNITIVE PERSPECTIVE ON
LINE MANAGERS' INVOLVEMENT IN
CROSS-UNIT ACTIVITIES**

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ABSTRACT

The efficient use of knowledge and information allows organizations to compete more effectively in the marketplace. The aim of this study is to understand if and how managerial involvement in cross-unit activities influences managerial assessment of information received from a unit where managers were involved. That is, we discuss how the involvement of line managers in auditing influence managerial assessment of the information passed on from corporate auditing. Throughput modeling is used in this research to understand how line managers use information, and to find out whether audits assist them in promoting productivity. Senior line managers in a major organization completed a survey questionnaire addressing their perceptions and judgments regarding the usefulness of auditing services. Our study supports the notion that managers can influence recipient units' perception of the sending unit by using liaison mechanisms such as managerial cross-unit involvement.

INTRODUCTION

Information is paramount to coordination in large organizations (Thompson, 1967). However, information is not a free and easily accessible good. Employees in organizations spend much time and effort on transmitting and translating information suggesting that it is very important to ensure that information is used most effectively. Managerial involvement in cross-unit activities can serve this purpose.

In this paper we present the results from a survey conducted in a very large business organization on the involvement of line managers in cross-unit activities. The aim of the survey was to understand if and how managerial involvement in cross-unit activities influences managerial assessment of information received from a unit where managers were involved in the activities conducted in that unit. More specifically, we focus on how the involvement of line managers in auditing influence managerial assessment of the information passed on from corporate auditing.

Transmission of auditing information is an important means of ensuring organizational units' coordination to the objectives of the larger organization (Mintzberg, 1983; Galbraith, 1995; Grandori, 2001). Ideally, top- and line managers should perceive of auditing as providing important information on the performance of organizational units. Managers should use this information in conjunction with other information when making strategic and organizational decisions. The rational perspective on decision making that underlies much of the organization design literature predicts that line managers make use of auditing services when it is relevant to the problems facing the unit. Line managers' should assess the information provided by the auditing function as important when auditors understand and adjust the auditing to the particularities of the operating units (Rotch, 1993). Some means of

transferring information from the operating units regarding these particularities are needed and line managers' involvement in auditing activities is one way to further auditors' understanding of the operating unit (Rodgers and Housel, 2004).

However, cognitive decision theory indicates that decision makers will not necessary make use of all relevant information in decisions (Rodgers, 1999) the implication being that coordination may fall short of what can be achieved. Studies have revealed that the use of information in decision making to a large extent depends on how the decision maker perceive of the sender and of the validity of the information they receive (Rodgers, 1991). Thus, the information may be relevant to line managers but may not be used because they do not perceive of it as valid or stemming from a unit of high importance in the organization.

We apply the Throughput Model developed by Rodgers (1984) which is an extension of the rational perspective on decisions in order to gain insight on the interaction between line managers' perception of the of corporate auditing, the way in which they judged the skills the auditors and their assessment of the services provided by auditing. Our main finding is that line managers' perception of the auditing function influence their assessment of the services provided by auditing and therefore also the likelihood that they will use the information from auditing. Line managers' involvement in auditing activities strongly and significantly influences their perception of the auditing function that indicates that line managers' involvement in auditing will positively influence their use of auditing information.

The study adds to the discussion in the organization design literature on the use of liaison mechanisms in the organization structure to ensure coordination between units (Mintzberg, 1983; Galbraith, 1974, 1995; Grandori, 2001). Liaison mechanisms are typically used to achieve coordination when unilateral passing of information is insufficient or when information is costly to code. Our study indicates that liaison devices such as managerial cross-unit involvement have a broader function than that of mere transmission of information.

Cross-unit involvement influences decision makers' perception of the information received from other organizational units and therefore their propensity to use information from these units.

Our findings challenge the assumption in much of the organization design literature where decision makers' use of relevant information is assumed to be constrained only by costs of communication, time and processing capacity. The study indicates that the way the decision maker perceives of the sending unit influences their use of information. The managerial implications of the study is that valuable information such as that contained in auditing reports can be used more effectively in organizations when the recipient has a positive perception of the sender of information. We argue that managers must direct more attention to the situational factors that influence how information is perceived by a receiving unit. Among such situational factors is the receiving unit's perception of the sending unit.

The design of the paper is as follows. We begin with an outline of the theoretical foundation of the study. From an organizational design perspective auditing is attributed to the function of controlling and ensuring an overall coordination of the use of organizational scarce resources. The value of the auditing services to operating unit managers in achieving overall coordination depend on how well the auditing activities are adapted to the requirements of the operating units. We use organizational design literature to discuss the use of cross-units involvement by line managers in auditing as a means of ensuring this coordination. We then investigate if cross-unit involvement has additional benefits in terms of directly or indirectly influencing the way in which line managers' perceive of the services they obtain from auditors. We implement the Throughput Model to understand and estimate the importance of the direct and indirect effects of line managers' involvement in auditing on their assessment of auditing services. We conclude by drawing a number of theoretical and managerial implications from our study.

DECISION MAKING AND COORDINATION:

AN INFORMATIONAL AND A COGNITIVE PERSPECTIVE

The information perspective that underlies most of the organizational design literature is based on the premise that decision makers use new information communicated to them when it is relevant to the decision problem he faces (Carter, 1995; Casson, 1994). Different decision makers can hold different expectations regarding the states of nature that characterize the decision problem they face. However, decision makers use information in a similar manner to up grade their expectations about the probability of the occurrence of different states of nature (Hirshleifer and Riley, 1992). Any decision maker facing the same decision problem and holding same expectation will treat the new information in a similar manner before reaching the same decision.

It is an underlying tenant in organizational design literature that information is costly to gather and to communicate among members of an organization and for that reason information should be differentially dispersed within the organization. Members of an organization also face limits in processing information which leads to information overload causing delays and errors in decision taking (Carter, 1995; Casson, 1994, 1997; Marschak and Radner, 1977).

Successful coordination between organizational units depends upon adequate information and the important issue facing firms is how to create efficient informational structures that economize with information costs given the need for coordination among organization units.

The cognitive perspective on decisions set focus on the mental processes that leads individuals to make a certain decision (Rodgers, 1991). When decision makers have different mental models they will not necessarily reach the same decision using similar information.

Studies of decision making in experimental settings reveal that the way in which individuals make decisions is influenced by a host of factors such as the way in which information is presented (Slovic, 1972; Ho and Rodgers, 1993), the structure of the problem, the time pressure in decision making and the degree of expertise of the decision makers (Mohrman, Gibson, and Mohrman, 2001.) and the cognitive types of the decision makers (Hough and Ogilvie, 2005).

Within this literature the two main approaches is the cognitive complexity and the cognitive style approach to the study of the relationships between information processes and decisions (Hendriksen, 1982). The cognitive styles refer to "...individual differences in preferred way of organizing and processing information and experience" (Messick, 1976, p.5). The cognitive complexity approach deals with how the decision process is influenced by different levels of environmental uncertainty as reflected in the information set.

The cognitive perspective on decisions indicates that successful coordination in organization is contingent on the way in which the decision makers make use of the information they receive. Thus, an efficient coordination structure is one that ensures that information is presented to the decision in ways that are in accordance with his decision making processes. Moreover, the decision processes can be influence by prior information and experience which indicate that the kind of exposure a decision maker is subject to in the organization matters to decision making and coordination.

We use the Throughput Model (Rodgers1984) to capture the interaction of important relationships between information and mental phases. The Throughput Model is a comprehensive model that depicts how different forms of information interact with decision

makers' processes during several phases of progression before a decision or evaluation is made.

The Throughput Model

The *Throughput Model* is a parsimonious way to capture how major differences among organizations influence decision making in firms. This decision-making model has been shown to be useful in conceptualizing a number of different issues important to decision making in organizations (Rodgers 1997). We use the model to understand how differences in managerial cross-unit involvement influence their mental processes and the way managers assess auditing information.

The Throughput Model conceptualizes decisions or assessments as the outcome of the interaction among perception (problem framing and biases), information (available), judgment (analysis). The stages of perception, information, judgment and choice are always present in decision making, however their predominance or ordering influences decision making. There are differences of opinion about how many stages and subroutines within stages exist and the order in which the stages occur but the concepts in the model proposed here appear with some consistency in the literature (Hogarth, 1987).

The basic information processing modeling normally involves serial processing. In the Throughput Model we take this approach one step further by assuming parallel processing to provide a more interpretative cognitive schema. That is we assume that there are many (often times simultaneous) pathways leading to a decision and that prior held knowledge critically influence decisions in organizational units.

In our study we asked line managers of operating units to assess the bundle of auditing services they have received in the past. This assessment represents a decision outcome which depends on the information managers have received during their time in the firm in the form of auditing services and feed back from the environment and on their mental processes. We

do not expect the bundle of auditing services to be entirely uniform across operating units. However, by limiting our study to a single organization we hold constant a lot of the variance in the services provided by auditing. All units in the organization deal with the same corporate auditing function. Moreover, all units perform similar type of activities and therefore require a similar degree of coordination between auditing and operating unit all though their specific needs differ.

The theoretical model is presented in Figure 1. Arrows from one construct to another indicate the hypothesized causal relationships explaining differences in managers' assessment of the auditing information they receive.

Insert Figure 1 about here

Involvement contains our background variable which in this case is the extent to which line managers have been involved in the auditing function.

Perception contains the process of individuals framing their problem solving set or view of the world. Depending upon the task at hand, this framing involves individuals' expertise in using pre-formatted knowledge to direct and guide their search of confirming or disconfirming of incoming information necessary for problem solving or decision making. Rodgers (1997) argued that perception represents a person's expertise, classifying and categorization of information. It does not change the actual information, but influences an individual on what type, kind and magnitude of information will be selected for further processing. In Figure 1, perception refers to the way in which line managers have categorized the role of the auditing function in the organization. Involvement by managers in auditing can influence, change, or alter an individual's perception by providing them with information

that is only accessible to managers who are involved in auditing. Therefore Figure 1 presents perception and involvement as interdependent.

The *judgment* stage contains the processes individuals' implement to analyze incoming information, as well as the influences from the perception stage. From these sources, rules are implemented to weigh, sort, and classify knowledge and information for problem solving or decision making purposes. In the present setting judgment refers to the weigh that managers are willing to place upon information contained in an auditing report. We argue that this in turn depends on if they believe the routines and skill of auditors are adequate for the task so that information received from auditing is in fact valid.

Finally, in the *decision choice* stage an assessment of auditing services is reached. We do not directly test if managers use the services provided from auditing but rely on the assumption that managers who assess services positively are more likely to make use of the services.

CORPORATE AUDITING FROM AN ORGANIZATIONAL DESIGN PERSPECTIVE

Mintzberg (1983) identifies corporate auditing as a part of what he terms the techno-structure of the organization. The techno structure consists of “analysts who serve the organization by affecting the work of others” (p.15). Ideally, the role of auditors should be to make the work carried out in the operating units more effective and to ensure that the operating units does what the top managers wants – to fulfill this task auditors define standards for performance and gather information to aid the process of planning in the organization. Thus, auditors are important in the coordination of organizations. Specifically, the functions carried out in auditing can be seen as an overlaying coordination mechanism where budgets, transfer prices

and performance standards serve the function of allocating and economizing with scarce resources including managerial attention across the organization's units.

In the organization we study auditing is a staff function at the corporate level of the organization. The aim of the department is to improve performance and accountability in the organization. Among the responsibility of the auditing department is the examination of operating units as well as assisting these units in assessing the risk in their portfolio of activities in order to control the organizational level of risk exposure. The activities carried out in the operating units in the organization in question consist of the production of services and sales to customers.

Auditors are often grouped in units based on functional criteria, that is, all members of the unit are involved in auditing and they share the same type of education. This is also the case of the organization in which we conduct our study. The creation of separate units of auditors and employees carrying out operating tasks reflects the fact that interdependences are stronger among operating activities and auditing activities, respectively, than between operating and auditing activities. However, there are remaining interdependences which imply that information needs to be passed between the auditing unit and the operating units to achieve coordination. As a minimum, auditors need information on which to base their assessment of the units and the units need information about the assessment. The auditing unit may also need information from operating units about the particularities of their activities in order to choose the auditing methods most appropriate for the unit in question.

Auditors, in performing their task, are constrained by the requirements of corporate law as well as by accounting standards. However, this leaves ample room for differences in the way in which auditing is carried out in organizations. The management accounting literature offers different perspectives on the main task of auditing as for example, collecting appropriate information (Horngren and Foster, 1991) influencing behavior through the choice

of control alternatives (Merchant, 1985) or through the way control influences motivation (Young, 1988). Let alone, emphasizing one perspective over another will result in different ways of carrying out the auditing function. Adding to this is the fact that auditors face different constraints on carrying out their task due to differences with respect to how easily results and inputs can be measured, how well known are the influence of external factors on unit performance, the extent to which units share resources with other units, and a number of other factors that makes correct assessment of performance of a unit difficult. In order for auditors to develop effective means of carrying out their auditing tasks, they need information about the particularities of the units to which the management control techniques are applied.

Within the limitations set by the functional grouping of auditors there are different ways in which coordination can be achieved. Auditors can obtain knowledge about the particularities of the units by seeking information from line managers or employees; they can experiment with different management control techniques or they can cooperate with the managers in the auditing process – that is they may use cross-unit involvement as a coordination mechanism.

An Information Perspective on Cross-Unit Involvement

Cross-unit involvement range from the creation of a matrix organization with formal linkages between units carrying out different functions over temporary project that are set up to carry out a specific coordination task to managerial involvement in other units. In the organization we studied cross-unit involvement consisted of line managers' participation in risk assessments of their business carried out by corporate auditing.

In the literature on organizational design cross-unit involvement is perceived of as an expensive way of achieving coordination because it is time consuming and because it sacrifices some of the advantages of specialization that could otherwise be obtained. The extent to which a firm makes use of this coordination mechanism depends on the

contingencies it faces in terms of its tasks, environment and strategy (Mintzberg 1983; Burton & Obel 1988, Galbraith 1974, 1995). Cross-unit involvement should be used when firms face a need to adapt to unforeseen changes that create new unforeseen interdependencies between units. Under such circumstances adaptations will cause an overburden of information processing capacity in the hierarchy.

Based on the arguments presented above we should expect line managers' involvement in auditing to be limited to situations where when adaptation require mutual exchange of information between auditing and operating units. Managerial involvement in auditing should positively influence line managers' assessment of auditing services because it enables a relatively speedy transmission of information and adaptation of auditing services to the particular circumstances facing the operating unit. This leads to the following hypothesis:

H1: line managers' involvement in cross-unit activities with auditing will positively influence their assessment of the services they receive from auditing.

Within the information perspective that underlies the organizational design theory managerial involvement is only perceived of as a means of transmitting information. The information perspective treats the mental processes that lead managers to select and use information differently as a black box. Thus, the influence of managerial involvement in shaping, for example, the perception and judgment that managers use in evaluating information they receive from other units are not taken into account. In the following we set focus on these mental processes.

A Cognitive Perspective on Cross-Unit Involvement

The literature on knowledge transfer (Nonaka, 1994) points to cross-unit involvement in organizations as a means of transmitting sticky or tacit information. Information can be difficult to transmit either because the receiver does not have the cognitive capacity required to use the information or because of the way the information can be encoded. Sticky

information refers to the situation where costs of transferring information is high due to the way, in which it is encoded or due to the lack of “ absorptive capacity” of receivers of the information (von Hippel, 1998). Receivers may, for example, lack an understanding of the context, in which the information is derived. Tacit information is information that cannot be codified such as for example skills (Nonaka, 1994). Thus, line managers’ involvement in the auditing function may enable them to act as boundary spanners (Cohen & Levinthal, 1990; Briers & Chua, 2001; Levinal & Vaast, 2005) between auditing and the operating unit. In that capacity line managers can interpret information passed between the units. Thus, managerial involvement in cross-unit activities may serve a coordination purpose even when there are only simple interdependencies between units.

Managerial involvement in auditing is not just a means of easing the transmission of sticky and tacit knowledge is also a means of influencing the mental processes managers use to evaluate the information or services they receive from auditing, that is, managerial involvement may influence managers’ perception and judgment stages in forming an assessment of the value of auditing information.

We are particularly interested in whether the recipient unit’s view of the sending unit influences its assessment of the information it receives and if this view is shaped by the recipient’s involvement with the sending unit. There are two important ways in which cross-unit involvement influence the recipients’ view of the sending unit. First, cross-unit involvement will shape the way in which a recipient frames the decision environment (the role of the sending unit in the organization) in the perception stage and therefore also the importance they attribute the information received from the sending unit (Nutt, 1998). Second, cross-unit involvement will provide the recipient with a better understanding of the way in which information is gathered and processed in the sending unit and therefore also of the validity of this information for decision making in the recipient unit.

Line Managers' View of the Role of the Auditing Function

The role of the auditing function in firms varies from that of controlling the performance of organizational units to that of assisting organizational units in improving their performance. In fact, auditors often operate in different organizational units and observe the practices in these units. An important activity of auditors is to inform line managers about- and facilitate implementation of best practices among units. In the firm where we conducted our survey it was the aim of top management to enlarged the role of auditing from mainly a control function to more of a management advice function.

The extent to which auditing is in fact able to deliver useful management services to line managers depends on how innovative they are in their approach to auditing. It is a central tenant in the literature on innovations that innovation and knowledge creation is contingent on the information members of a unit receive from other members of the organization. According to Nonaka (1994) organizations that facilitate cross-unit involvement create a context of knowledge creation when the important knowledge to be shared is tacit. Thus, cross-unit involvement of line managers in auditing may serve the purpose of creating in auditing the knowledge needed to deliver the novel managerial services.

H2: Line managers' assessment of the role of auditing as being innovative and leaders will positively influence their assessment of the services they receive from auditing.

However, the importance of cross-unit involvement goes beyond the traditional knowledge sharing function. Cross-unit involvement also expose line managers to the goals and dominant norms and values in the auditing unit and may therefore socialize managers in ways that make them perceive of the units as being innovative and leaders –the role designated by top management to Auditing. Managers' perception of the role of Auditing in the firm frames their perception of the auditing services they receive.

H3: Line managers' involvement in cross-unit activities with auditing will positively influence their assessment of the role of auditing

Line Managers View of the Validity of Auditing Information

The services rendered by auditing to line-managers have limited value if auditors do not possess the relevant skills to carry out the auditing and adapt their practices to the problems faced by operating units. Auditing is characterized by a high degree of standardization of the skills and the formal training of auditors ensures that they possess the minimum skills required to perform the job. However, as pointed out above different organizations and organizational units work under different conditions which often require some adaptation of the auditing activities. Line managers may perceive that auditors need special training in order to fully understand how to measure the unit's performance. How managers perceive of the skills of auditors is important in their assessment of the validity of the information they receive from auditing which in turn is an important factor in determining managers' use of auditing services. Managers may believe the skills to be appropriate but the auditing routines to be inappropriate, that is, managers may, for example, perceive of the time between audits as inappropriate and the information therefore not fully valid.

Therefore, we expect line managers' assessment of the services they receive from auditing to be influenced by their assessment of auditors' skills and routines. This is reflected in the following hypothesis

H4: line managers' awareness of auditors' skills and routines will positively influence their assessment of the services they receive from auditing

Line managers who are involved in auditing activities are likely to be in a better position to evaluate the skills of auditors and to appreciate the limitations auditing faces in adapting practices geared to their particularities of units. Line managers with a realistic

evaluation of the skills and the limitations faced by auditing will adjust their expectations regarding the services they receive accordingly. Therefore, we expect that:

H5: line managers' involvement in cross-unit activities with auditing positively influence their awareness of the skills of the auditing unit

In order to study the decision process, it is necessary to break up all the paths marked with arrows in Figure 1 into these five sets of individual pathways. Based on Figure 1, the decision-making processes can be represented in an organized manner as the following five pathways:

- I → D (1) Hypothesis 1 (involvement influences assessment of auditing services)**
- P → D (2) Hypothesis 2 (assessment of the role of auditing influences assessment of auditing services)**
- I ↔ P (3) Hypothesis 3 (involvement influence assessment of the role of auditing)**
- J → D (4) Hypothesis 4 (awareness of skills influences assessment of auditing services)**
- I → J (5) Hypothesis 5 (involvement influence awareness of skills)**

METHOD

Data Collection Instrument

To test the hypotheses and the framework in Figure 1, qualitative data were collected from a global bank survey. Questionnaires were sent to the managers of various offices throughout the worldwide bank locations. The questionnaires contained a number of questions relating to each of the constructs in the model and recipients were asked to indicate their response on a scale ranging from strongly agree (5) to strongly disagree (1). The *Throughput Modeling* approach is based upon 407 (51%) questionnaires that were completed by senior line managers in a major organization. Our response rate compares favorably with the response rates generally obtained with an organization population (Culbertson and Rodgers, 1997). Such a response rate is characteristic of survey research on organization personnel. In addition, this organization did not allow sending follow-up requests to non-

respondents. Finally, our response rate was not surprising, given that the directions specifically gave respondents the option of leaving an item blank if they regard it to be non-applicable or if they were uncertain about it.

Measures

Variables proxying perception, information, judgment, and decision choice are described in Table 1. The independent variable of involvement was measured by asking recipients to indicate how closely they were involved in Corporate Audit's annual analysis of the risk levels for their entities or businesses. This question captures the cross-unit involvement occurring in the organization we studied.

The independent latent concept of perception was measured by questions asking if (1) Corporate Audit should perform ongoing monitoring activities to stay informed about my business, (2) Corporate Auditors are seen as leaders, (3) Corporate Audit is seen as innovative in its approach, and (4) Selected line personnel should, on a rotational basis, be a part of the audit team. Questions 2 and 3 give an indication of the extent to which line managers believe that auditors are perceived of by members of the unit as being proactive (innovative) or conservative (controlling). Questions 1 and 4 indicate whether line managers perceive of the auditing function as having a sufficient outward absorptive capacity (Cohen & Levinthal, 1990) which is an important indicator of their innovativeness. When line managers strongly feel that audit should perform ongoing monitoring activities or receive unit members on rotational basis they indicate that they believe the auditing unit is in need of more external informational ties in order to be innovative.

The judgment latent concept was measured by the following: (1) the time between audits, given the risks of my business, is appropriate; (2) the auditors have sufficient knowledge of my business and do not need to be trained; and (3) the auditors are professional in their approach. These questions captures the extent to which line managers perceive of the

skills and routines of auditing as being adequate for the assessment of the risk of their business (the activity in which line managers could be involved). Several statements assessed the decision choice concept: (1) the audit recommendations are constructive and feasible; (2) the impact of significant business issues reported is accurate; and (3) Corporate Audit provides a valuable service to my business. These statements represent assessments of the services rendered from auditing to the line managers.

All the questions that capture the latent concepts of perception and judgment as well as those that assess the decision choice concept are framed as positive statements which could create a bias in managers' response toward a more positive indication of how they perceive auditing services and their role and skills. The organization felt that the questions framed in this manner helped to build upon their theme of successful practices. However, this framing creates a similar systematic bias in all latent variables so that neither of these variables is given greater weight due to the framing of the questions.

ANALYSIS

The reliability, convergent and discriminant validity of the model were analyzed using LISREL 8.5 (Joreskog and Sorbom, 1993) and maximum likelihood estimation. Table 2 presents the paraphrased wording, standardized coefficients, and z-statistics for each item as well as the composite reliability values of the scales used in the study.

A satisfactory fit was achieved as evidenced by a goodness of fit index (AGFI) value of 0.90, a comparative fit index (CFI) value of 0.91 (Bentler and Bonett, 1980), an Incremental Fit Index (IFI) value of 0.91 (Bentler and Bonett, 1980), and the ratio of chi-square to degrees of freedom of (i.e., χ^2/df) less than 5 (Wheaton, Muthen, Alwin and Summers, 1977). Further, the fit of the model was also supported by the root mean square residual (RMSR)

value of 0.05. Finally, the fit of the model is also supported by the statistical significance of all the factor loadings.

Model Constructs

For this study, we use a two-stage causal model to determine the effects of perception, background information, and judgment on line managers' decision choices. All of the relations in the model are significant (at $p < .05$), except for one relation, which was significant at $p < 0.10$ as depicted in Table 2.

Insert Table 2 about here

RESULTS

The organizational design literature lead us to formulate hypothesis 1 in which we expect managerial involvement to positively influence managers' assessment of the services they receive from the auditing unit. This hypothesis was moderately statistically significant ($p < .12$) and explained 0.04 of the variance in managerial perception of the services from auditor. The hypothesis is based on the assumption that auditing needs information from line managers in order to adapt their services to the operating units' requirements. Moreover we assume that the direct effect from **I** to **D** implies involvement by managers in providing auditing with the relevant information. We do not directly test these assumptions. However, the firm in which we conducted the survey has operating units in different countries and the operating units varies with respect to their clients and in their risk exposure all of which indicate a need for adaptation of auditing services to the specific setting of the units.

The indirect relationship between involvement (**I**) and the assessment decisions (**D**) do not take into account how managerial involvement influences managers' mental processes in shaping their assessment of the services. The latter four hypothesis concerns these effects of managerial involvement. From the Throughput Model it appears that there are several

possible causal links between line managers' involvement in auditing, perception, judgment and their assessment of the services they receive from auditing leading to different pathways through which managers have arrived at an assessment of these services

Hypothesis 2 concerns the relationship between managers' perception and their assessment decision (**P**→**D**). This pathway was significant at the $p < 0.05$ level and had a weight of 0.33. Line managers' perception of the role of auditors also had a statistical significant impact on their judgment of the skills of auditors ($p > 0.05$) and a weight of .85 in explaining differences in their judgment of auditors' skills (**P**→**J**). Both the perception to decision pathway and the perception to judgment pathway have high weights which is important because it implies that even small change in managers' perception of the role of auditors will have a great influence on their assessment decision. Hypothesis 3 expresses an expected interaction of line managers' involvement in auditing on their assessment of the role of auditing (**I**←→**P**). The relationship is significant ($p < 0.05$) and has a weight of 0.08.

The judgment construct which captures how much weight managers are willing to put on auditing information also had a significant ($p < .05$) and strong (a weigh of 0.73) influence on line managers' assessment decision (**J**→**D**). This result supports hypothesis 4 in which we expected managers' assessment of auditors' skills to be important in their evaluation of the services they received. Moreover, judgment is influenced by involvement as expressed in hypothesis 5. The pathway (**I** →**J**) which accounts for how involvement changes line managers' information about the skills in the auditing function was significant ($p < 0.1$) and carries a weight of 0.08. The analysis shows that there is also a statistically significant ($p < 0.05$) influence exerted by the region in which managers are located (weight 0.15) and the duration of managers employment with the firm (weight of 0.10)¹ on managers judgment

¹ There is a positive correlation (0.12) between managers' duration of employment with the firm and their involvement with auditing.

indicating that cultural factors and the extent of managers' experience with the Auditing unit is more important in shaping managers assessment of the skills of auditing than involvement.

When we contrast our findings regarding hypothesis 1 with our findings using the Throughput model we see that it important to take account of the mental processes managers use in assessing information. Differences in managerial assessment of the services from auditing turn out to be largely explained by these mental processes. However mental processes can be influenced by for example managerial involvement. The results show that managerial involvement changes the way in which managers asses information from other units by augmenting their perception and judgment processes. When both judgment and perception have strong influences on managerial assessment of information any changes in these mental processes will greatly influence the use of information in the organization. Therefore, managerial involvement is more than an information transmission mechanism it is also a means of changing the "absorptive" capacity of organizational units. The study also reveals that the mental processes that influence managers assessment of information from other organizational units is influence by other factors than their involvement in the sending units' activities. However, further studies are needed to reveal the most effective means of augmenting decision makers mental processes in ways that make them use information more effectively within organizations.

CONCLUSION

Cognitive decision theory informs us that the way in which information is used depends on the recipients' prior knowledge and their perception of the information and the sender of the information. We used The Throughput Model to identify the interaction between managerial involvement, managers' cognitive processes, and managers' assessments of

services from outside units. Our study confirms that the way in which the transmitting unit is perceived of by the recipient unit matter to how they assess the information they receive and therefore also to how they use this information. A managerial implication from our study is that more attention should be paid to factors which hinder or further how organizational units use information. Among the important factors are decision makers' cognitive structures. Our study shows that managers can influence these structures by using liaison mechanisms such as managerial cross-unit involvement.

In most of the literature on organizational design managerial involvement in cross-unit activities are perceived of as simply a means of achieving coordination in situation where intensive communication is needed or when communication is hampered by the presence of tacit information. Based on our study we find this to be a too narrow perception of the possible benefits stemming from this liaison mechanism. Managers should also consider the broader function of cross-unit involvement in shaping the receiving units' perception of the sending unit.

Our study was narrowly focused on the use of auditing services in operating units. This was a convenient setting because auditing services are widely used in organizations and are important in reaching the overall aim of a firm. Auditing is often organized as a staff function and their role is often perceived of as that of gather information for the use of planning, budgeting and control in operating units thus often limiting the interaction between auditing and other units to a simple transmission of data. However, our study reveals that a more extensive interaction between the auditing and the operating units influence line managers' cognitive processes in ways that should make them more responsive to the suggestions and actions taken by Auditing. Within the rearm of auditing our study indicates that the shifting focus from traditional auditing roles to provider of more expansive services may require that

managers reevaluate the need for interaction between members of the organizational units and the auditing function if not entirely reposition the auditing function in the organization.

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TABLE 1. SUMMARY OF VARIABLES IN THE MODEL

Perception

1. Corporate Audit should perform ongoing monitoring activities to stay informed about my business.
2. Corporate Auditors are seen as leaders.
3. Corporate Audit is seen as innovative in its approach.
4. Selected line personnel should, on a rotational basis, be a part of the audit team.

Background Information

1. Years with the organization.
2. Region you are located.
3. Involvement in Corporate Audit's annual analysis of the risk levels for your entities or businesses.

Judgment

1. The time between audits, given the risks of my business, is appropriate.
2. The auditors have sufficient knowledge of my business and do not need to be trained.
3. The auditors are professional in their approach.

Decision Choice

1. The audit recommendations are constructive and feasible.
2. The impact of significant business issues reported is accurate.
3. Corporate Audit provides a valuable service to my business.

Table 2:
PARAMETER ESTIMATES

Causal Model Parameters

		<u>Standard Weight</u>	<u>Critical Ratio</u>
<u>Regression Weights</u>			
Perception	→ Judgment	.85	4.64*
Years with firm	→ Judgment	.10	2.14*
Region located	→ Judgment	.15	3.10*
Involvement	→ Judgment	.08	1.60**
Perception	→ Decision Choice	.33	2.16*
Judgment	→ Decision Choice	.73	5.36*

Correlation of Independent Variables

	<u>Perception</u>	<u>Years with firm</u>	<u>Region located</u>	<u>Involvement</u>
Perception	1.00			
Years with firm	.03**	1.00		
Region located	.02	.11*	1.00	
Involvement	.08*	.12*	.05	1.00

Chi-square with 45 df = 168
Adjusted Goodness of Fit index (AGFI) = 0.90
Comparative Fit Index (CFI) = 0.91
Incremental Fit Index (IFI) = 0.91
Root Mean Square Residual = 0.05
 $\chi^2/df = 3.7$

* p < .05 ** p < .10

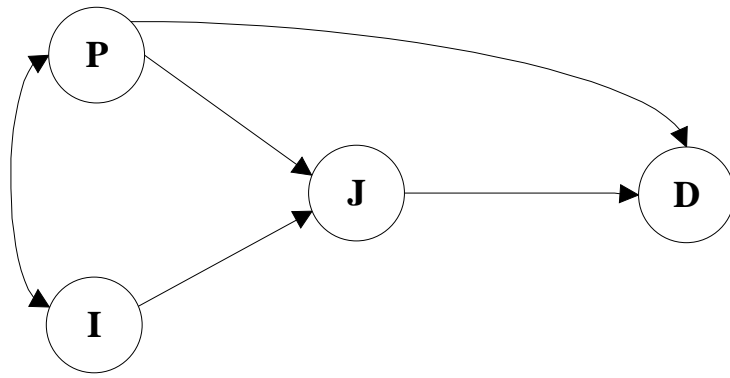


Figure 1. *Throughput Modeling Process*

where P= perception, I= information, J= judgment, and D= decision choice.