Judgment analysis (JAN) and simulation to capture policy decisions of school superintendents
by Gaylord Charles Lasher

A thesis submitted in partial fulfillment of the requirements for the degree of Doctor of Education
Montana State University
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Abstract:
The problem of this study was to determine whether the judgment policies of superintendents are affected by an addition of two information cues relating to declining student enrollments and declining economic resources. In this study the judgment policies were analyzed in relation to the use of information contained in environmental cues. Two groups were used in the study. In addition to the two cues about decline which were given to the second group only, subjects in both groups were asked to consider five factors related to the probability of successfully managing a school system: the level of trust between teachers and management; the climate-attitude in the district for innovation; teacher participation in decisions related to program and policy; demands from interest groups to maintain or provide more services; and the attitude of the community toward general fund budget increases.

The study was conducted in the spring and fall of 1984. The population was Montana school superintendents in Class AA, A and B school districts.

Data for the study was gathered with the use of a simulation instrument. The instrument was a compilation of 75 numerical profiles, each of which represented a unique environmental condition. The method of analysis was Judgment Analysis (JAN), a type of multiple regression. JAN yielded multiple regression equations or policies for each rater and for each group of raters. The policies were defined by the standard score regression weights (betas).

In each of the two groups analyzed, there was only one combined policy. In Group One, that had five information cues, the decisions of the superintendents emphasized the importance of the community's attitude toward budget increases and trust between teachers. Group Two emphasized the same two factors, although in reverse order. The analysis showed that the information about decline did not appear to make a unique contribution toward predicting the combined judgment policy of Group Two.

Though inconclusive, the results of the study suggest that superintendents in Montana do not see the advent of a decline in enrollment or financial resources as an occasion to make great changes in the way they make decisions about managing school systems. Training in the management of decline, including decision making, may help superintendents be more effective by teaching them about the opportunities that are available to redesign their organizations through the introduction of adaptive innovations.

JUDGMENT ANALYSIS (JAN) AND SIMULATION TO CAPTURE POLICY DECISIONS OF SCHOOL SUPERINTENDENTS

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A thesis submitted in partial fulfillment
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This thesis has been read by each member of the thesis committee and been found to be satisfactory regarding content, English usage, format, citations, bibliographic style, and consistency, and is ready for submission to the College of Graduate Studies.

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Date March 3, 1986

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ABSTRACT

The problem of this study was to determine whether the judgment policies of superintendents are affected by an addition of two information cues relating to declining student enrollments and declining economic resources. In this study the judgment policies were analyzed in relation to the use of information contained in environmental cues. Two groups were used in the study. In addition to the two cues about decline which were given to the second group only, subjects in both groups were asked to consider five factors related to the probability of successfully managing a school system: the level of trust between teachers and management; the climate-attitude in the district for innovation; teacher participation in decisions related to program and policy; demands from interest groups to maintain or provide more services; and the attitude of the community toward general fund budget increases.

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CHAPTER I

INTRODUCTION

The time after World War II to the middle 1970s was a period of unprecedented growth in the United States. The Gross National Product multiplied several times and the nation's population more than doubled (Boulding, 1975: 8). Public education institutions experienced similar growth and prosperity. For several decades public schools saw increased enrollments, the construction of new facilities, and the expansion of programs and services (National Center for Educational Statistics, 1980; Divoky, 1979). The long period of abundance shaped American character and molded its leaders to define their success in terms of growth (Bakalis, 1981: 8). So it has been with school administrators. When, in the 1970s, the economy began to slow and school enrollments to decline, many school leaders were ill prepared by training or experience to respond appropriately (Levine, 1978).

Kenneth Boulding (1975) projects the future as an age of slow down in which at any one time large segments of the economy will be undergoing decline in one form or another, and in which school revenues are reduced by the twin forces of economic recession and public resistance to increased taxation. March (1974) while appearing to agree with Boulding's assessment of the economic future, suggests that the view of education in decline is not cataclysmic. He argues that educational institutions as we know them will exist for some time but their

organizational and institutional makeup will be forced to change as economic resources become scarce and school enrollments continue to fall (p. 133).

The challenge for educational leaders is great. The need for school administrators who are skilled in the management of decline must be one of the profession's first priorities (Whetten, 1980: 343). The leadership challenge is accentuated by the fact that for over thirty years educational leaders have been trained to manage the problems and opportunities of growth, and according to some researchers may actually have a trained incapacity for managing decline (Levine, 1978: 317; Whetten, 1981: 84).

One of the least pleasant scenarios for the future is the prospect of increased conflict between teachers and management. Competition for scarce resources may contribute to distrust and escalate adversarial relationships (Scott, 1976: 56-59). Lack of growth creates other personnel problems. Traditional promotion incentives become more limited; lateral and vertical mobility tend to decrease; the opportunity to attract new, young (and possibly more flexible and creative talent) is reduced at the very time conditions may require the greatest infusion of energy and innovation (March, 1974: 135; Dembowski, 1979: 174; Cuban, 1979: 379).

Judgments and Decisions

As a result of decline, educational administrators in the next few decades will have to work in an organizational context different from the one known by their professional counterparts of the recent past.

The judgments on which they base their management decisions will have to be retuned to fit the times (March, 1974: 135; Starbuck et al., 1978: 111-137). Managers of institutions in decline will have to decide how to adjust their goals and policies to fit the conditions of scarcity.

Little is known about how school superintendents use information to make decisions. Theoretically, decision making in school organizations is a rational goal-directed process based on the collection and processing of knowledge in a bureaucratic setting (Rappoport, 1972: 131-175; Tyack 1980: 60-61). But many authors suggest that judgments based on rational criteria are inhibited by limits on human information processing capabilities and by the political practicalities of self-interest (Morgan and Wofford, 1977; Nuttall, 1976; Boyd, 1979; Bower, 1968; Simon, 1958).

Problem Statement

The problem of the study was to determine whether the judgment policies of superintendents are affected by an addition of new information cues relating to declining student enrollments and declining economic resources.

Contributions to Educational Research

In a recent and extensive review of research on the school administrator, Edwin M. Bridges (1982: 12-33) found that a majority of research on school administrators has been centered on administrator traits and attitudes. He suggested the need for more research into

administrative behavior. This study is a response to Bridges' challenge, in a small way, by focusing on a relevant superintendent behavior--the formulation of judgment policies in the management of school systems. The topic has been chosen, in part, because Levine (1978: 316-325) and Hedberg, Nystrom, and Starbuck (1972) have noted the tendency for decision makers to become blindly committed to old programs and insensitive to the nature of new problems or to define problems in terms of available solutions.

The research devoted to the management of decline has been dominated by studies that document attitudinal, political and demographic consequences of enrollment declines (Keough, 1978: 351; Davis and Lewis, 1976: 9; Rodekohr, 1975; Dembowski, 1979; Culbertson, 1977: 44). By looking at decline in a broader context that includes economic decline and stagnation, this study makes a further contribution to the body of literature.

General Questions to be Answered

The research study is designed to answer the following questions:

1. Do each of the Montana superintendents in the study use information from simulated environment conditions in a consistent linear way when making managerial judgments?
2. Does the addition of more information change the way superintendents use the five information cues to judge the probability of successfully managing a school district?
3. Do the management policies of the superintendents in Group One tend to cluster into one or more groups?

4. Do the management policies of the superintendents in Group Two tend to cluster into one or more groups?

The first five cues selected for use in the study were: trust between teachers and management; the climate-attitude for innovation; teacher participation in decisions; demands from interest groups; and the attitude of the community toward budget increases. Additional information found in cues six and seven respectively were: decline in enrollment and decline in financial resources.

General Procedure

The study was conducted in 1984. An important condition in the study was the administration of an instrument that simulated organizational conditions accurately enough to elicit responses from superintendents as if the conditions were real.

The instrument itself required subjects in each group to make seventy-five judgments about the probability of maintaining a high quality educational program within the district.

The research process involved two groups of 39 Montana superintendents. Group One was given 75 school district profiles; Group Two received the same profiles as Group One but with the addition of two information cues about decline.

The power of the experimental design in this study developed from the large number of judgments employing five and seven variables with JAN (Judgment Analysis), a form of multiple regression analysis. The seven variables are: level of trust between teachers and management; climate-attitude in the district for innovation; teacher participation

in decisions related to program and policy; demands from interest groups to maintain or provide more services; attitude of the community toward general fund budget increases; decline in financial resources available for district services from the previous year and decline in student enrollment from the previous year. The judgment policies of the subjects were identified by use of the Judgment Analysis Technique (JAN).

The JAN methodology (Bottenberg and Christal, 1968: 28-34; Christal, 1968: 24-27) begins with the assumption that each judge has a decision making policy. It utilizes a hierarchical grouping technique that clusters judges on the basis of homogeneity of their prediction equations. Use of JAN permits the identification of a judgment policy that exist in the group of subjects and the number of clusters of judgment policies that exist for the total group. The results of the analysis allow the researcher to predict individual and group judgment and to make an analysis of interjudge agreement (Holmes and Zedeck, 1973: 26).

Subjects for the study were contacted in advance to obtain their commitment to participate in the study. Care was taken in the preparation of the directions to the subjects in the study to assure their complete understanding of the procedures of the simulation. The parameters of each cue in the simulation were carefully defined and tested for clarity with a pilot group.

Limitations and Delimitations

The following are limitations of this study.

1. Since it was not possible to employ all the variables faced by superintendents when making management judgments into the simulation, the number of cues was limited to five and seven of the most important influences on the environment.
2. The emphasis of this study was on quantifying environmental variables in decision making with the goal of being able to predict behavior in real life situations.
3. The use of a linear model of analysis presumes that the relationships among the variables is linear and not curvilinear.
4. The review of literature for the study is limited to the resources of the Renne Library at Montana State University including interlibrary loans, ERIC, and Dissertation Abstracts.

The following are delimitations of the study.

1. The study population was limited to 78 school district superintendents in Montana representing medium to large sized districts.
2. The study was limited to data collected from spring to fall of 1984.

Definitions

Judgment: The mental or intellectual process of forming an opinion or evaluation by discerning and comparing two or more variables. It will be used in this study as synonymous with decision.

Organizational Decline: The term has three distinct meanings:

1. Resource Decline: The reduction or cutback in the budget, staff or services of an organization.
2. Enrollment Decline: A reduction in the number of students attending a given school system. Given the common practice of tying school funding to numbers of students enrolled, there usually is a relationship between enrollment decline and resource decline.
3. Stagnation: In the context of organizational decline, stagnation connotes a lack of sensitivity or a deterioration of vitality, which when present in an otherwise declining system may reduce its capacity for responding appropriately to organizational problems.

Scarcity: The lack of enough resources to permit the organization to meet the needs and goals of the organization and its clients.

Judgment Policy: Defined by Dudycha (1970) as the extent to which one is able to predict the behavior or actions of a judge (rater) from the known characteristics of the stimuli he is being required to evaluate. Thus the judgment policy is the prediction equation of each judge or group of judges.

CHAPTER II

REVIEW OF LITERATURE AND RELATED RESEARCH

Introduction

In order to more fully understand the phenomena of organizational decline in school systems a review of the literature on economic and demographic trends is essential. The problems of managing systems in decline requires an investigation of human and organizational responses to decline. The theoretical literature on decision making and human judgment provides insight into the process of individual and group policy formation. In order to study how individuals combine discrete pieces of information to make judgments, the literature from psychology on information utilization is also reviewed.

In summary, in order to link the large body of literature on decline to the process of forming judgments about its manageability, the following major topics are developed in this chapter:

1. Historical Background to Decline in the Schools.
2. Individual and Organizational Responses to Decline.
3. Making Decisions about the Management of Declining School Systems.
4. Theories of Decision Making and Judgment.
5. Information Utilization and Judgment Formulation.

6. Judgment Analysis (JAN Technique).

7. Summary.

Historical Background to Decline in Education

The problems of decline in education can only be understood in the context of the conditions of growth that have dominated the economic and social history of America since the rise of the industrial revolution in the 19th century (Bakalis, 1981: 7). For several generations Americans saw continued increases in population, real personal incomes, and the gross national product. Human productivity was reflected both in births and economic expansion. Social institutions, though often lagging behind the rapid growth of other aspects of society, also experienced expansion (Boulding, 1975: 8).

Through it all, free public education remained the heart of the American dream. Education opened the doors to opportunity and served as a psychological frontier of hope (Bakalis, 1981: 9). Education was a lubricant for growth and development; it was also its beneficiary. Education itself became a growth industry reflected in increased enrollments, the construction of thousands of schools, and the creation of a large population of professional educators (Janssen, 1980).

The golden age of abundance in America built its economy, shaped its institutions and molded a unique American character (Sutton, 1956; Potter, 1954). Nurtured by the exalted faith of an entire nation in growth and abundance, America's schools became an institutional reflection of public expectations (Perkinson, 1968).

Education, as a national institution, continued to prosper even during periods of economic recession or when major social or industrial upheavals disrupted the stability of society. It smoothed the transition when 30 million farm workers were displaced due to the mechanization of agriculture and when millions of emigrants sought the skills they needed to buy into America. The fact that many Americans were, in reality, excluded from enjoying the fruits of abundance did little to reduce the faith people had in education. Discrimination toward minorities and women served to emphasize the importance education played in providing access to the benefits of material abundance. In an analysis of education in the United States one observer summarized:

> For the most part...the restrictive functions of the school in regulating access to the society of abundance went unnoticed. As long as the economy was expanding there seemed enough for all...the very fact of abundance in the U.S. society made the school increasingly appear as though it were not only the chief vehicle to acquire access, but in fact was itself a basic cause of the affluence of the nation. Thus education was further ingrained in the American faith and was solidified in the public mind as the panacea for all the nation's economic and social ills. By the mid-1960s education became the major Presidential tool for reshaping the nation [italics in original] (Bakalis, 1981: 9).

Many observers are now judging the 70s as a watershed decade in which the traditional values of growth and expansion began to give away to more "conservative" values based on conditions of scarcity (Boulding, 1973; Schumacher, 1973; Ehrlich, 1974; Lasch, 1979).

In an early analysis of long range prospects for the U.S. economy Kenneth Boulding noted, "The prospects for the next 50 to 100 years... suggest that we are entering a slow down" (1975: 9). Other economists

characterized the future of the U.S. economy as "steady state" (Daly, 1973) or "zero sum" in which any increase in one sector result in a corresponding decrease in another sector (Thurow, 1979).

In his analysis, Boulding went on to suggest that education is likely to be the first major segment of the economy to suffer a decline. His prediction was validated virtually on the heels of its expression. In 1975, when Boulding made his remarks, enrollments in elementary and secondary schools were on their way to a drop of over 5 million students. (National Center for Educational Statistics, 1982: 38). The decline in student numbers was accompanied shortly by severe economic problems throughout the country. Several years of double digit inflation and high interest rates stung taxpayers who in turn began to signal school managers that the age of abundance in education was coming to an end. Educational leaders had their first face to face confrontation with the need to manage scarcity, a frightening prospect for managers whose previous training and experience was oriented to managing growth (Whetten, 1980: 342-344; Divoky, 1979: 87).

The scope of changes in the 1970s is illustrated by the relation of school enrollment to the cost of education. Revenues to public schools in the decade from 1960 to 1970 rose by 175 percent while enrollments went up 31 percent. In the following decade revenues increased 120 percent, over 90 billion dollars, at the same time enrollments were dropping by 10 percent. Inflation was a strong factor in the 1970s. Between 1970 and 1980 the Consumer Price Index (CPI) rose by nearly 85 percent. Nonetheless, consumers were not unaware that the real costs of education were continuing to increase even while

enrollments declined (National Center for Educational Statistics, 1982: 42-44). In a perceptive early analysis of the effects of decline on consumers Diane Divoky wrote:

> Taxpayers saw lower enrollments not so much as an opportunity to improve schools as a way to keep money in their own pockets. School costs so much per child, the theory went, and fewer children would mean fewer tax dollars...this proved to be a vain hope. It soon became clear that gearing down is not the reverse of gearing up (p. 87).

Declining School Enrollments

Most research conducted since 1975 on the management of declining schools has converged on enrollment decline. It is not within the scope of this study to do a lengthy analysis of this particular area of the decline literature; however, the topic does need to be investigated, insofar, as enrollment declines have contributed to the problems of school management. The demography of enrollment is easily understood in the context of fertility rates, changing mores and economic imperatives. The products of the well documented baby boom of the post-war years completed their passage through the schools during the 1960s. At the same time dramatic declines in fertility rates resulted in a decrease in the numbers of children entering school for the first time (National Center for Educational Statistics, 1982: 38-70). The demand for more facilities in the 1950s and the 1960s resulted in construction of thousands of schools all over the country. Paradoxically, by the last half of the 1970s one of the most serious problems facing educational administrators was the need to close schools.

The question of when to close schools and which schools to close was studied by Boyd (1979). He found that studying enrollment decline rates does not allow one to predict which schools will be closed. Rather, political factors and school location are prime determinants on when and which schools are selected for closure. A study by Colton and Frelick (1979) tended to confirm Boyd's findings, noting in particular that careful economic planning did not characterize school closure decisions. Andrews (1974) investigated the criteria used in school closing decisions and found that size of enrollment and age of building to be the most often cited. Other criteria such as impact on the neighborhood, desegregation, proximity to other schools, safety of children, and impact on educational programs presumably had little influence on decision makers. The influence of politics in school closure decisions was confirmed by Borstein (1979) who found that neighborhoods with the least political clout tend to lose their schools in closure decisions. Burlingame's (1979) investigation of school closing decisions found that local community values, rather than cost or other technical-rational criteria, influenced school closure. The social and economic impact of school closures was also studied by Eismann (1976). He found some negative impact on the local community. Small business lost trade even to the extent of having to close down. In a few instances there was a deterioration of neighborhood appearance and a moderate accompanying decline in property values. A similar study by Stefonich (1979: 6-17) tended to confirm Eismann's data.

The consequences of school closures on personnel have been the focus of several investigations (Cuban, 1979: 378; Dembowski, 1979: 101; Nolte, 1976: 26-27; Keough 1978: 350-252; Thomas, 1977: 5). Most studies conclude that the stress of school closures plays havoc on staff morale and has at least a short term detrimental effect on performance.

The impact of school closures on students has also been examined (Richards and Cohen, 1981; Rodekohr, 1975). These researchers conclude that there are no long term negative effects on children when schools are closed. On the other hand, both studies produced evidence that the quality of education for students actually improved in the declining districts because of smaller teacher-pupil ratios and increased per student expenditures on education.

Decline in Public Support for Schools

As troublesome as dealing with declining enrollments can be, the specter of declining public support for education is a far greater concern for most educators. Has there been a turning away from the faith and trust Americans have long invested in education? Is it a coincidence that the decline in student enrollment seems to parallel a period of scarce economic resources for schools and a falling off of support for schools from the public?

Answering these questions requires, in part, to place public education in context of the egalitarian reform movements of the last two decades. When the nation sought to expand economic, social and political opportunity to its citizens, it was natural that it turned to

its educational institutions to provide the leadership and design the programs that would make opportunity for all a reality. It was assumed as a matter of course that education could eliminate the technological leads of the nation's enemies, erase the problems of its cities and guarantee the rights of its minorities and females (Mayhew, 1974: 15). Given such lofty expectations disillusion may have been inevitable.

Changing societal values have also had a profound effect on public attitudes toward its educational institutions. The 70s and 80s appear to be times when people were more concerned with "now" and "me." Traditional commitment to principles supporting the general welfare have been pushed aside by people seeking the good life (Hechinger, 1980: 3).

As the population ages, the overall commitment to support schools through taxes decreases. Older people want to keep what they have and not pay higher taxes to schools (Boyd, 1982: 122). Public attitudes toward schools are examined in an annual Gallup poll. Questions about taxation for funding schools were administered in the years 1969 through 1972. The questions were asked again in 1981. The results show that the proportion of public that favored raising taxes for schools was lower in 1981 than in any previous year. Thirty percent favored raising taxes in 1981 compared to forty five percent in 1969 (National Center for Educational Statistics, 1982: 40). By 1981 several states had passed legislation limiting taxing authority for schools. State and Federal level spending were being curtailed as well for many government functions.

The question of whether there is a relationship between decline in enrollment, decline in public support for schools, and declining economic resources seems to be answered in the affirmative. It is most clearly seen in the attitude that a financially strapped public has toward schools with increasing budgets and declining enrollments (Janssen, 1980). Declining student population may be directly related to a major shift in public values. People of America made decisions to reduce the size (and expense) of their families. They appear to have similar expectations for the schools they support with their tax money (National Center for Educational Statistics, 1982).

Some scholars express a deterministic explanation for decline. Lewis B. Mayhew (1974) has theorized that education may be following the life cycle course of any social institution.

> The first step is one of dynamic growth; social expectations rise, there is excitement, expansion, and self confidence and the institution is able to meet or seem to meet those expectations. The second stage is one of conflict as social expectations exceed the capabilities of the institution. There is frustration, anger, and recrimination.... The third period is one of neglect, reduced expectations, indifference, passivity and stagnation (p. 16).

In Mayhew's view, education and its leaders may have to pay the price for having convinced the nation that it held the solution to all of society's needs.

Decline as Organizational Atrophy or Stagnation

As noted earlier, stagnation is not necessarily a companion to other forms of organizational decline; but, its presence can affect a system's capacity to successfully cope with the effects of an

enrollment or resource decline. Charles Levine (1978) has explained that internal atrophy and declining performance can be caused by several factors including role confusion, decentralized authority with vague responsibility, stifled descent and upward communication, lack of self-evaluating and self-correcting capacity, high staff turnover, continuous reorganization and obsolescence caused by routine adherence to past methods and technologies in the face of changing problems (p. 319).

Several authors have called for self-designing organizations that protect themselves from stagnation through strategic planning and evaluation (Hedberg, Nystrom, and Starbuck, 1977; Weick, 1977: 31-46). It has been suggested by some researchers that a stagnant organization may actually be jarred loose from its inertia by the conditions in a declining environment and thus become more effective (Whetten, 1980: 346-347). Logic suggests, however, that an organization with a long experience of stagnation may simply lack the vitality to respond appropriately when conditions change dramatically.

During periods of relative abundance stagnant schools are able to compensate for their limited performance by distributive policies that effectively enable them to buy their way out of trouble (Boyd, 1979). Distributive policies involve the dispensing of resources in such a way that everyone gets something. Dembowski (1979: 18) suggests that distributive policies are typical of growing organizations and are used to resolve conflict. Morgan and Wofford (1977: 29) agree. They argue that the introduction of new programs is a well established way of reconciling diverse and conflicting pressures upon schools. When a

pressure group complains that the schools should be doing one thing rather than another, the controversy may be resolved by simply adopting the new proposal and keeping the old. In periods of economic decline competing demands cannot be pacified as before and a school system without institutionalized vitality is poorly equipped to cope with the controversy that ensues (Hedberg, Starbuck, and Nystrom (1977).

Individual and Organizational Responses to Decline

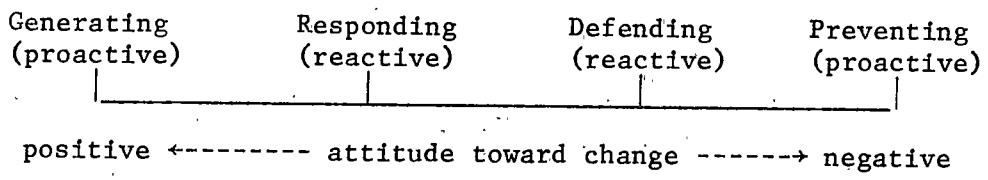
Growth and decline are both forms of organizational change. The problems of managing one are similar to the other; however, the problems of managing change in any form are compounded by scarce resources (Levine, 1978: 316). The loss of discretionary resources for cushioning uncertainty, risking innovation, and rewarding loyalty and cooperation is a serious problem for many managers of declining organizations because they are influenced by their experience to try to solve the problems of scarcity using the strategies proven effective when resources were more abundant, namely, internal allocation procedures (Whetten, 1981: 84-85).

How does one pilot an organization when much of the conventional steering gear has been stripped away? Some scholars have looked at this issue in terms of the attitude managers have toward change (Thomas, 1977: 5; March, 1974: 137). David Whetten (1980) has studied declining organizations and related managerial attitude toward change to four response categories: generating, responding, defending and preventing. Whetten's model, as shown in Figure 1, describes the two proactive responses on either end of the continuum, one reflecting a

negative attitude toward environmentally induced change, and the other, the generating response category, an indicator of positive attitude toward change.

Figure 1

Management's Response to Environmentally Induced Change



Whetten (1980)

The "preventing" response to decline typically takes the form of manipulation or compensatory strategies intended to avoid or reduce the loss of resources. In an extensive study of declining school systems in Quebec, Crespo and Haché (1982: 75-99) found that before establishing the means to operate within fixed budgets, public school managers attempted to increase budget funds available in three ways: student recruitment, financial manipulation, such as expending budget surpluses or seeking special grants, and sale or rental of surplus space or material. Another common form of "prevention" response is organized political activity to induce legislators, school boards and other financial support agencies to increase allocations to the schools. "Preventing" is seen as a proactive response emanating from a negative attitude toward change and intended to shield the organization from decline. As such, in times of severe environmentally induced change, "prevention" strategies avoid the opportunity to respond to social and

economic crisis with more innovative and adaptive solutions (Mayhew, 1974: 157).

"Defending" strategies are commonly employed by educators in an effort to capture public sentiment for ideological values that support public education. For example, a "defender" might be expected to cite remarks from Thomas Jefferson or other notable Americans regarding the importance of an educated citizenry to the preservation of freedom. Appeals for the need to protect the welfare of children from the effects of budget cuts may be used and it would be expected that employee loyalty, competence and efficiency would be offered up as rationalizations for why budget cuts should be avoided (Pfeffer and Salancik, 1978).

A third category or mode for response to environmentally induced change is somewhat confusingly labeled "responding". It is the most commonly used strategy and may be characterized as "weathering out the storm". Two management descriptors of the "responding" category are "cutback management" and "retrenchment". Levine (1978) and Crespo and Haché (1982) argue that cutback policies such as across the board cuts, reduction in force based on seniority, and program terminations are passive responses which reflect resignation to the inevitable necessity to reduce the size of the organization.

The great majority of the "advice" literature on managing decline promotes "responding" strategies (Institute for Responsive Education, 1982: 37-70; Eisenberger and Keough, 1974; Rodekohr and Rodekohr, 1975: 352-357; Thomas, 1977; National School Public Relations Association, 1976). Managers who employ "responding" strategies typically view

decline as a threat to the survival of the system, characteristically, one of the most common side affects of using this management approach is goal displacement in which long term education improvement goals give way to short range goals adopted to reduce organizational turbulence. Crespo and Haché reported on this phenomena from their observations in Quebec schools undergoing decline:

> ...selecting and implementing strategies to deal with enrollment decline had been done on a reactive, crisis-management basis with little if any regard for the long term consequences of the organization's ability to pursue and attain its educational goals (1982: 92).

The three response modes discussed to this point are commonly combined in practice. Managers seek useful solutions to the problems of decline, and depending on the circumstances, one, two or all three responses may be employed in the same general situation.

The fourth response to resource decline is called "generating". It is a reflection of a more positive attitude toward change. Much of the promotion for adopting "generating" responses to decline comes from organizational theory espoused by scholars who argue that managers should embrace decline as an opportunity to "redesign" their organizations by the introduction of innovation (Weick, 1977; Starbuck, Greve and Hedberg, 1978). Hedberg, Nystrom and Starbuck (1976: 56-63) offer the thesis that organizations should look more like collapsible tents than like stone palaces, explaining that organizations such as school systems should seek minimal consensus, minimal contentment, minimal affluence, minimal faith, minimal consistency and minimal rationality. This point of view has received popular dissemination by Toffler (1970) in his book Future Shock. The concept of "minimums" is explained by

Hedberg, Nystrom and Starbuck (1976) in these excerpts about minimum consensus and minimum affluence.

> Since the usual organization seeks more consensus than is useful, since it often settles for superficial symbols that subordinates are properly submissive, and since it suppresses conflicts that could be genuinely resolved, additional dissention would confer benefits (p. 56).

> Discontent generally decreases as an organization gains affluence....Everyone can receive a little more, mutual self-satisfaction grows, and self-confident complacency sets in. Insensitivity toward environmental and organizational happenings accumulates and spreads. Since the usual organization is seeking as much affluence as possible, it can be charged with striving to maximize its unawareness of reality (p. 57).

Whetten (1980, 1981) has written extensively in support of "generating" responses to decline. He also places great importance on the rejuvenating qualities of organizational innovation. Whetten (1981) attributes real world absence of "generating" strategies to several "efficiency reinforcing dynamics", namely: (1) the conservative effects of stress; (2) the trained incapacity of administrators; (3) the innovation-resistant organization structure; (4) problem solving based on efficiency data; (5) the most innovating members leaving the organization; and (6) crises leading to the espousal of traditional values (p. 83-88).

Whetten (1981: 92) tells his readers that he is not arguing against educational administrators increasing efficiency in response to resource scarcity, however, he does view the emphasis on reactive responses such as retrenchment and cutback as overemphasized in the literature to the detriment of the more adaptive potential of innovation.

Even though reactive and proactive responses to resource decline are not mutually incompatible in practice, they do emanate from different attitudes toward decline, the former is relatively negative, the latter more positive. It is unlikely, therefore, that both would be employed at the same time by any given manager. "Generative" responses to decline presume a fairly high level of rationality which some authors suggest that complex organizations may be incapable of achieving, especially in times of stress (Simon, 1958, 1960; Cyert and March, 1963; Dahl and Lindblom, 1953: 83). Whetten (1980) has cautioned, "If managers under stress need to behave contrary to their reflexive patterns, considerable thought and research will be required to discover methods for countering these natural tendencies" (p. 386).

Making Decisions about the Management of Declining Schools

When school organizations are confronted by decline, three decision tasks must be made by management: first, the system's leadership will have to decide what posture toward decline will be adopted, a factor which will be strongly influenced by the attitude of management toward decline; second, given the philosophical direction of the district, leaders must select appropriate response strategies; third, if necessary, management will have to make decisions about how and when cuts will be made (Levine, 1978: 319). These decisions will be greatly affected by the causes of decline and by the environmental conditions peculiar to any given system (Crespo and Haché, 1982: 75-99).

Case studies of school systems in decline can help managers predict the consequences of various decision policies. In one major

longitudinal study, the researcher discovered that high socioeconomic districts in decline suffer from higher levels of conflict than "lower status" districts, resulting in more "political" decision making in the high status communities (Boyd, 1979: 333-365).

The politics of decisions in a declining enrollment district is discussed in a historical sequence of events in the Arlington, Virginia School District by its superintendent (Cuban, 1979: 367-369). Another history of managing decline is told by two school board members who aspired to lead their district through a rational process of retrenchment and discovered instead that the community offered no support for cost reduction (Morgan and Wofford (1977: 156-157). This particular study, in the Lincoln-Sudbury, Massachusetts School System, is an especially valuable contribution to the literature because the three year project was based on the optimistic notion that the problems of decline could be solved if the various constituencies of a school community were given the opportunity to "buy-in" through participation in the retrenchment process. What Morgan and Wofford discovered instead was the existence of numerous separate constituency interests that would not concede to the common good (1977: 156). The final result of the Lincoln-Sudbury experience was the opposite of the authors' original intention:

> We gave something to everybody. We instituted the Intensive Studies Program for those who wanted more structure, we added college credit courses for those who wanted more challenge, we started a service component program for those who felt students should contribute, and we cracked down on the attendance for those who wanted consistency. And all this ended up costing more money not less (Morgan and Wofford, 1979: 156-157).

Unity of purpose is difficult to achieve in declining school districts because the redistributive issues raised by decline cause interest group changes and conflict (Freeman and Hannan, 1981: 29-32; Boyd, 1979).

Cutback decisions often do not include the input from school patrons and faculties. The success of top-down retrenchment policies also seems to be dependent on situational variables in the environment including the authority and credibility of the decision maker. When there is inconsistency between official pronouncements for the need and direction of cuts and the actual occurrence of cuts, suspicion, distrust, cynicism, and noncompliance may develop (Argyris and Schon, 1974). The threat of conflict is one reason why many scholars and practitioners advocate the involvement of the staff and community in retrenchment decisions. The limited research to date offers no clear cut evidence that participatory decision making does, in fact, reduce conflict or improve the quality of decisions. The view from the field seems to be that many managers rely less on participative decision making in periods of decline than they would when times are more normal (Yetton, 1975).

Much of the literature cited in this study implies the need for research to check the reliability of conventional theories on communication, conflict resolution, leadership and decision making to explain behavior during the crisis of decline. As most organizational theories were developed and tested in expanding environments, their adaptability to conditions of decline may be justifiably questioned (Whetten, 1980).

Decision and Judgment Theory

A review of the literature on the theories of decision making, requires an analysis in order to clarify the direction of study and assist the reader in making the connection between the management of declining schools and the judgment policies of school managers.

For the purposes of this paper we will adopt the position of most scholars in the field and make no substantial distinction between judgments and decisions (Slovic and Lichtenstein, 1974: 16). Rappoport and Summers (1973) proposed:

> ...judgment is an uniquely important functional aspect of thinking that allows persons to cope with, or adapt to uncertainty...[and] because of its central role of mediating between intentions or purposes of the persons and uncertainties in his environment, judgment can only be understood by scrutinizing person-environment interactions (p. 4).

A strong element of rational choice is implicit in Rappoport and Summers' assumptions.

The theoretical foundation for rational decision making is found in the work of Herbert Simon (1958, 1960). In Simon's (1958) words,

> ...rationality is concerned with the selection of preferred behavior alternatives in terms of values whereby the consequences of behavior can be evaluated...a decision is organizationally rational if it is oriented to the organization's goals; it is personally rationale if it is oriented to the individual's goals (p. 76).

Simon places emphasis on the centrality of knowledge to the decision making process but agrees with March, that there are limits to human intellectual capacities in terms of capturing the full scope of information and the complexities of problems (March and Simon, 1958: 140-141). Thus most human judgments are concerned with the discovery

and selection of satisfactory alternatives and only in exceptional cases is it concerned with the discovery and selection of optimal alternatives. Simon (1958) coined the word "satisficing" to characterize this decision making behavior. Psychologically, satisficing simply involves the adjustment of aspiration levels to reality as it is perceived from the information at hand. Aside from man's limitations as a processor of information, the quality of his organizational decisions is affected by the desire to optimize his personal goals (Stagner, 1969), avoid employee resistance and maintain the support and good will of the client community (Miller and Starr, 1967: 23-30; Etzioni, 1968; Vroom and Yetton, 1975).

Cyert and March (1963) suggest that the more uncertainty there is about a long-term outcome, the greater the tendency to make policy decisions on the basis of short-term acceptability within the organization. This pattern was confirmed by Crespo and Haché in declining Quebec school systems (1982). Etzioni (1968) suggests that whenever a person is looking only for a choice that offers some degree of improvement over the status quo, his analysis is limited to two choices--a new course of action or the old one. If neither meets his minimal requirements, he looks for other alternatives until he finds one that does (p. 253). In this way, satisficing can include the consideration of several alternatives. The important distinction is that they are considered sequentially rather than through a more complex process of interrelated pros and cons.

The case studies on declining school systems offer credence to the claims of historian, Ernest May (1973) that it is not uncommon for

leaders to follow the simple decision rule: Do what we did last time if it worked and the opposite if it didn't.

Some authors see the answer to the limits of human information processing abilities to be in a decision process that involves many smaller change steps. Dubbed incrementalism, the theory has been advanced most notably by Charles Lindblom (1959) who refers to the process as the "science of muddling through". Incremental decision making is geared to alleviating immediate problems rather than optimal long range solutions. Lindblom (1959) defends incremental change in the following way:

> ...given the limits in knowledge within which policy makers are confined, simplifying by limiting the focus to small variations from present policy makes the most of available knowledge. Because policies considered are like present and past policies, the administrator can obtain information and claim insight. Non-incremental policy proposals are therefore typically not only politically irrelevant but also unpredictable in their consequences (p. 80).

The value of incrementalism as a series of successive adjustments leading toward the overall change goal, is as with all pragmatic philosophies, measured by its utility and the fact that it recognizes the plurality of values found in partisan interest groups (Braybrooke and Lindblom, 1963). The question of whether incrementalism can do anything to meet the problems of crisis and near crisis proportions remains unresolved. For some authors, it is difficult to put aside the vision of a zigzag passage to unanticipated disaster as leaders "stagger through history like a drunk putting one disjointed incremental foot after another" (Boulding, 1964).

The open-political decision theory as espoused by several scholars has many similarities to incrementalism (Whetten, 1981; Pennings and Goodman, 1977, Wamsley and Zald, 1973; Boyd, 1979). Whetten (1981) describes the concept as follows:

> ...within this framework, the function of an organization's administration is to serve as a coalition coagulant. It strikes bargains with competing interest groups by committing a portion of the resource pool to support their values and objectives in exchange for their commitment to collective goals--decision making in organizations is characterized by tension between the routine and the novel (pp. 81-82).

The political model of decision making described here clearly removes administrators from the role of rational-technical problem solver and substitutes administrators as dilemma managers. Decision making in this context is noted by ambiguity and contradiction (Cohen and March, 1974).

Whetten (1981) argues that although the political decision making model may have the outward appearance of being solely a mechanism for cutback and retrenchment (basic efficiency responses to decline), administrators can use the impetus of retrenchment for exploring new and innovative ways of achieving greater effectiveness and improved efficiency (p. 83).

Information Utilization and Judgment Formation

Prior to 1960 there was little research on information processing as it precedes and determines human judgment. The advent of the electronic computer has provided the tool for decision theorists to analyze large and complex data sets. Subsequently, hundreds of studies within the field of information utilization have been published (Slovic

and Lichtenstein, 1973; Darlington, 1968; Hammond, 1965; Naylor and Wherry, 1965; Rappoport and Wallsten, 1972; Bjorkman, 1967). Of particular interest to this study is multiple regression analysis of information utilization (Brunswik, 1952, 1955; Stewart, 1976; Beach, 1967; Dudycha and Naylor, 1966). The assumption underlying these studies of information processing is that frequently man must depend on probabilistic information in making judgments about some prevailing state within his environment (Brunswik, 1943). The judgment is conceived as centering on the relationship between cognitive and environmental systems (Rappoport and Summers, 1973; 4). The cognitive system is any organized set of relationships between a person's judgments and the information on which the judgments are based.

Rappoport and Summers (1973) explain that cognitive systems can be thought of as "policies." "To the extent that an individual finds meaning in a body of uncertain information, he does so through application of an implicit or explicit policy concerning (1) the casual relationships indicated by the information and (2) the relation of his goals or purposes to that information" (p. 4). The environmental system is the information itself as it is contained in probabilistic cues.

The success of human judgment is dependent upon an individual's ability to interpret and weigh what is often uncertain information to arrive at an appropriate decision. In each instance an underlying judgment policy guides a decision maker when he or she is processing information. Knowledge of people's judgment policies provides insight

for understanding why certain judgments are made in response to a given situation (Anderson, 1977: 68).

Summary

Enrollment and resource decline has become a rather common phenomena in public schools. Population shifts have assured enrollment stability and even growth in some quarters, but for many school systems including some of the growing districts, the past ten years have been characterized by a transition from growth and abundance to decline and scarcity. In declining districts, school administrators are finding themselves faced with wholly different conditions than those they were trained to manage. They are caught between patrons who have been conditioned to expect first-rate educational programs for their children and taxpayers who are demanding reduction of costs.

The prognosis for the future shows some relief for enrollment declines as "boom-echo" babies begin to enter the schools in the late 80s. But, experts predict that "steady-state" economics will smooth the economic rip tides that fostered prosperity for nearly three decades after World War II.

The future of education in the United States will be influenced in part by how educational leaders respond to the changes in school environment. The literature on management of decline suggests that managerial attitude will guide responses to decline in a range from negative to positive and from reactive to proactive.

To some extent each individual reveals his posture toward change by the administrative decisions he makes and <u>how</u> he makes them.

Conventional technical-rational decision making processes are held in regard by a few scholars, however, many investigators propose that man's use of reason to solve problems is limited by circumstances such as political pressure, stress, self interest and his information processing capacity.

Previous research on human judgment has revealed that through the use of simulated environments, multiple regression statistics and computers, the judgment policies of individuals can be captured and studied.

CHAPTER III

PROCEDURES

Introduction

The problem of this study was to determine whether the management judgments of Montana school superintendents in medium to large sized school districts are affected by an addition of two cues relating to decline in economic resources and student enrollment. This chapter will explain the procedures that were followed in the investigation. The procedures of the study are presented in the following order:

1. Population Description and Sampling Procedure
2. Methodology
3. Method of Collecting Data
4. Method of Organizing Data
5. Questions to be answered
6. Analysis of Data
7. Precautions Taken for Accuracy
8. Summary

Population Description and Procedures

The population of this study was superintendents of class B, A and AA Montana public schools who were employed at the time of the study in the spring and fall of 1984. Class B, A and AA schools in Montana are

athletic conference designations representing school size. Because these categories of school district already exist, they provided a convenient and readily understood means of grouping the population sample. Class B school districts have student populations of 350 to 1200. Class A districts have student enrollments of 1200 to 2400. AA school districts are the largest districts in the state with student populations as low as 2500 and as high as 15,000.

The State of Montana also has over 100 class C districts. Because many of these districts are extremely small with less than 100 students comprising the entire kindergarten through 12 grade enrollment, the researcher judged that their inclusion in the population would not be appropriate to the purpose of the investigations. The cost per pupil in very small districts is much higher than in larger districts. In order to operate effectively they must be subsidized by the state in such a way as to minimize the effect of enrollment changes. In small school districts teacher/pupil ratios are usually small. It cannot be otherwise if basic programs requirements are to be met. A ten percent decline in enrollment in a school district of, say, 80 pupils is only eight, the effect of which would be quite minor. Comparatively, a district with 1000 students or 10,000 students would suffer far greater problems if forced to accommodate a ten percent decline in student enrollment or budget.

It was presumed, therefore, that to include Class C schools in the population one would extend the context of decline beyond the limits of where one could safely generalize the results of the investigation.

Another reason for excluding Class C schools from the population is the fact that virtually all extant literature on declining school systems attends to the problems of complex organizations comprised of numerous interdependent parts. The typical class C school system in Montana often has only one administrator, a handful of teachers and a very small, often highly homogeneous clientele. One might safely assume that the environmental variables that affect the manageability of high quality education in a small school system might be quite unlike the variables that influence management decisions in larger school districts.

The total population of superintendents in the study numbered 79. The population was reduced by one because the researcher himself is a member of the population. Of the remaining 78 districts, there were 50 class B school districts, 17 class A districts and 11 AA districts. The population was randomly divided into two groups with as close to an equal proportion of class AA, A and B districts in each group as possible. Sixty-five superintendents returned usable packets. The two groups were nearly equal with 33 superintendents in Group One and 32 in Group Two.

Methodology

To determine how the superintendents of this study use certain information to make decisions about managing schools, a type of multiple regression analysis called judgment analysis (JAN) was used in this study. Multiple regression analysis was used in early studies to model judgment processes underlying the integration of information in

decision making (Naylor and Wherry, 1965; Ward and Hook, 1963; Ward, 1963). Judgment analysis (JAN) is one application of linear regression developed by Bottenberg and Christal (1968) and expanded in application by Christal (1968). The model uses a hierarchial grouping technique that clusters judges according to the homogeneity of their prediction equations. Starting with the assumption that each judge has an individual policy, the JAN technique gives a squared multiple correlation coefficient (R^2) for each judge and an overall R^2 for the entire group of judges. In successive stages, intragroup comparisons can be made to increase precision and consistency in analyzing judgments. For example, two policies may be combined on the basis of their similar prediction equations resulting in the least possible loss of the predictive efficiency. The result is the reduction of the number of policies by one and a new R^2. The process may be continued until all judges are combined into a single policy. The analysis of each stage allows the researcher to identify the rating policies of each judge and groups of judges. The policy for each judge was represented by a regression equation and the standard score regression weights define the policy. Inherent to each policy is how the judge processes the information, that is, how his cognitive system relates to the environmental stimuli in forming his judgments (Dudycha and Naylor, 1966).

The consistency of each judge's use of the cue information across all profiles was measured by the squared multiple correlation coefficient (R^2). The R^2 thus becomes an indicator of the degree to which the judge's decision making behavior was predictable.

Standard score regression weights of the policy equations are used to measure the importance of each variable. In order to determine the ranking of the variables in each group, the beta weight with the greatest value was ranked one, the beta weight with the next greatest value was ranked two, and so on in successive decreasing order. The greatest value is the variable the judges considered most important in their criterion decision, the successively lesser values respectively less important.

The JAN technique has been proven to be an effective and reliable research tool for studying judgment policies related to evaluating school effectiveness (Houston, Duff and Roy, 1972), graduate admission policies (Williams, Gab, and Linden, 1969) and for the evaluation of paintings (Holmes and Zedeck, 1973). Leonard, Gruetzemacher, Maddox and Stewart, used JAN to identify the school evaluation policies of parochial school constituents (1982) and in another study the same team employed JAN to capture the image of the college of education and psychology in a university. JAN has also been used to investigate teacher quality (Anderson, 1977; Houston and Bentzen, 1969; Coltvet, 1970), teacher selection and evaluation policies (Duff, 1969; Heim, 1970), and the factors most important in implementing mastery learning (Osland, 1985).

The JAN technique itself has been the subject of several other studies. Dudycha (1970) published an evaluation of JAN in which the effectiveness of the technique in capturing and clustering judges policies was examined. The results of the investigation revealed that as cue redundancy increases it becomes more difficult for JAN to

discriminate the members of the policy groups. Dudycha's research also suggested that the clustering technique is better at computing an equation to which the judges could be grouped when ten predictors (cues) rather than only five were used (pp. 501-516). Several years later another group of researchers demonstrated that fewer than ten cues could be used without losing accuracy (Williams, Mabee and Brekke, 1976: 65-69). Anderson's study (1977) of relative cue rates and rater consistency revealed that numerical profiles were more consistently rated than verbal profiles and that the JAN technique distinguished the most important variables from others more clearly than did rating and ranking scales.

The power of linear judgment models in general was summarized by Slovic and Lichtenstein (1973: 16-108) in their review of regression approaches to the study of information processing in judgment.

> The linear model is a powerful device for predicting quantitative judgments made on the basis of specific cues. It is capable of highlighting individual differences and misuses of information as well as making explicit the causes of underlying disagreements among judges in both simple and complex tasks (p.45).

Method of Collecting the Data

The design for the instrument that was used to gather the data was developed by Gallagher (1982) and modified to fit the environmental conditions of the research.

Each subject was called and asked to participate in the study. As agreement was received, a packet containing the information profiles was mailed to the subject. The profile packets included a complete

explanation of the process that the respondents were to follow. Examples of completed profiles were included along with an explanation of the information cues.

Superintendents in both groups were asked to make a total of 75 judgments from information contained in each of 75 unique school environment profiles. Profiles for both groups had the same five pieces of information (cues). However, superintendents in Group Two were given two additional cues representing school district decline.

Subjects in both groups were asked to consider the information in each profile and make a judgment about the probability of creating or maintaining high quality education in the district. The independent variables in the study were the information cues. The dependent variable was the decision. A 100 point criterion scale was provided with each profile to aid in making the decision.

The cues used in this investigation were suggested in the literature and reported in Chapter II of this study as among those variables in real life environments that have been shown to affect the management and operation of school organizations.

Cue 1: Trust Between Teachers and Management (TTM) is a composite variable inasmuch as trust derives from several connections between the two parties such as communications, consistency, fairness and honesty. Trust, or the lack of it, is a by-product of relationships in labor-management negotiations, personnel management, and supervision as well as many other day-to-day contacts between staff and management. A district in which high trust level exists is characterized by openness,

friendliness, cooperation and risk taking. Low trust is seen in situations of conflict, suspicion and uncooperativeness.

Cue 2: The Climate-Attitude for Innovation (CAI) variable is suggested by criteria such as the presence of new curricular and staff development programs. The expression of visionary goals, the flexibility of the staff and school board toward adjusting past practices, and overall risk taking behavior are also good indicators of an innovative climate. A low innovation climate is defined by such features as extreme caution in trying anything new or different, distrust of novel approaches to problem solving and a strong reliance on past practice to guide decisions even if there is evidence that it is not longer effective.

Cue 3: Teacher Participation in Decisions (TPDM) was included as a variable because the literature suggests conflicting views on its importance to the management of changing organizations. Many researchers argue that teacher participation in program and policy decisions is appropriate and productive (Likert, 1967; Miskel, Fevurly and Stewart, 1979). However, the context of the research that supports this recommendation is one of stability and growth. In periods of turbulence it may be more efficacious and less stressful to concentrate decision making in the hands of management (Yetton, 1955). The level of teacher participation in decisions is measured by the extent to which teachers have achieved the prerogative to participate in making decisions in important areas such as curriculum, inservice, student personnel policies, school calendars and working conditions.

Cue 4: Demands from Interest Groups (DIGS) is easily defined by the number and intensity of public activism in school related issues. Pressure groups may have their origin within the school staff such as teacher organizations or curriculum specialty groups. They may be identified as parents, nonparents, taxpayers, political action groups or religious bodies. Individuals as well as groups may be involved, and the attitude or posture of the pressure group may range from friendly and supportive to hostile or even destructive. At issue in this particular environmental predictor is the pressure on the system's management to do or not do something.

Cue 5: The Attitude of the Community Toward Budget Increases (CAB) Indicators of this variable are the record of public support for local school operation levies, bond issues and other funding requests such as new program services for special education, libraries and gifted education. The attitude of the community may be further defined by the support it has given in the past to the financial decisions of the superintendent and the school board.

The last two variables were the additional information cues applied with the second group. Cue 6 and Cue 7 were used to measure whether these two variables influence the judgments of the subjects in Group Two and how the weights of the other predictors were affected by the decline information.

Cue 6: Decline in Enrollment (DSE). The information on declining enrollment varied in the profiles from zero (0) to minus ten (-10) percent from the previous year. Subjects were asked to assume that there was little likelihood that there would be any turn-about in

enrollment, and the rate of decline in the next few years would probably continue to vary from zero to -10 percent per year. This note of uncertainty was deliberately introduced to approximate real life conditions when a district was experiencing enrollment decline.

Cue 7: Decline in Financial Resources (DFR). The information to be provided on declining resources was intended to imply a real decline in the amount of money available to run the district from the previous year. For example, say a district's budget for year one was ten million dollars ($10,000,000). A decline of five (5) percent in financial resources would mean the next year's budget would be $9,500,000. Subjects were asked to assume that inflation, loss of average number belonging, reductions in special program funding, etc., were included in the percentage of declining resources figure.

Profiles

The environmental profiles were generated by computer at the Montana State University Computer Center. The seven information cues were transformed to fit a ten point continuum. The first four cues were on a scale of zero to 100. The last three cues were on a scale of zero to 10. In order to guard against cue redundancy (Naylor and Wherry, 1965; Dudycha, 1970), the cues were defined by the computer program to have low intercorrelations. Table 3 shows the intercorrelation among the cues to range from -.0723 to .0533.

Reliability

Reliability in this study is defined as the internal consistency with which the subjects in the study use the information they have available to make judgments about the probability of maintaining high quality education in a school system.

The multiple regression statistic and JAN technique used in the study methodology calculated a prediction equation for each subject's judgments. The consistency of each judge's prediction equation constituted an inherent measure of internal reliability.

Method of Organizing Data

The data in this investigation was in the form of the JAN analysis of 75 judgments (indicated by a rating on the criterion scale) from each superintendent in the study. The data was organized in tables as follows: list of variables; means and standards deviations of independent variables; means and standard deviations for judges' criterion ratings; intercorrelations between profile variables; correlation between the judges and the profile variables; stages of judgment analysis for the participating subjects; standard score regression weights for each judge and each of the two groups of superintendents.

Table 1

List of Independent Variables

Number	Variable	Abbr.
1	Level of trust between teachers and management	TTM
2	The climate-attitude in the district for innovation	CAI
3	Teacher participation in decisions related to program and policy	TPDM
4	Demands from interest groups to maintain or provide more services	DIGS
5	Attitude of the community toward general fund increases	CAB
6	Decline in student enrollment	DSE
7	Decline in financial resources available to the district from the previous year	DFR

Table 2

Means and Standard Deviations of Numerical Scale Values for the Independent Variables

Variable	Mean	Standard Deviation
1 TTM	49.10	30.73
2 CAI	50.39	31.84
3 TPDM	48.54	31.68
4 DIGS	50.18	31.62
5 CAB	5.03	3.16
6 DSE	-5.02	3.13
7 DFR	-4.83	3.18

Table 3

Intercorrelations Among the Independent Variables

Variable	1	2	3	4	5	6
1 TTM	1.00					
2 CAI	-.0023	1.00				
3 TPDM	.0242	.0134	1.00			
4 DIGS	.0499	-.0196	.0195	1.00		
5 CAB	.0069	.0148	.0320	.0284	1.00	
6 DSE	-.0451	-.0723	-.0002	.0289	-.0118	1.00
7 DFR	.0143	.0533	.0004	-.0329	-.0338	-.0269

Restatement of Research Questions

1. Did superintendents in Group One who used five pieces of information to judge the probability of successfully managing a school system cluster into more than one policy group?
2. Did superintendents in Group Two who had two additional pieces of information about environmental conditions have more than one policy when predicting the successful management of school systems?
3. How did superintendents in Group One weigh the importance of each of the five environmental conditions in their prediction of the successful management of school districts?
4. Did the addition of two information cues affect the judgments of superintendents in Group Two with respect to the five environmental cues that were presented to Group One judges?

Analysis of Data

The computer services of the Montana State University Testing Center were used to perform the multiple regression analysis utilized in the JAN Technique. As suggested by Houston, Duff and Roy (1972) and others, an *a priori* minimum drop of .05 in R^2 from one stage to the next stage was used to determine significant change in policy.

Precautions Taken for Accuracy

The individual criterion judgments were transferred directly to the computer by an employee of the Montana State University Testing Center and checked for accuracy by the researcher.

Summary

The problem of the study was to determine whether management judgments made by superintendents were affected by information about decline in student enrollments and decline in economic resources.

The population consisted of Montana Class B, A, and AA superintendents. Data was gathered with the use of two separate packets of simulated profiles. The packet for Group One contained 75 profiles using five information cues. The packet for Group Two contained the same as the packet for Group One except for the addition of two pieces of information. The cues (variables) within each profile were the conditions that are important in weighing decisions about the manageability of schools as determined by the literature. The scores

of the variables varied and approximated a uniform distribution in their usage throughout the instrument. The superintendents (raters) were asked to judge the probability that a high quality of education in the district can be created or, if already in place, be maintained given the environmental conditions shown in each profile. Demographic data was obtained from questions incorporated within the instrument.

The statistical method used for judgment analysis was a form of multiple regression. An R^2 and judgment policy was calculated for each rater and for each of the two groups.

Computer services of the Montana State University Testing Center were used to perform the analysis of the data.

CHAPTER 4

ANALYSIS OF DATA

Population

The single population that served as the focus of this study was school superintendents in medium and large school systems in Montana. The population was separated into two treatment groups. The first group received environmental profile data consisting of five pieces of information, the second group received the same information as the first group with the addition of two decline variables.

The number of possible participants in the study was 78. Of 72 superintendents who initially agreed to participate in the study, 65 returned the instrument; all were used in the analysis.

Research Questions

The research questions in this study were analyzed using the Judgment Analysis (JAN) Technique. The JAN Technique begins with the assumption that each superintendent in the study has an individual policy. It gives an R^2 value (predictive efficiency) for each superintendent and an overall R^2 value for the initial stage consisting of all the superintendents, each one treated as an individual system. The standard beta weights derived from the prediction equation for each

policy define the influence of each independent variable (environmental condition) on the judgment of the superintendents.

Tables are provided to report the data. Tables 4 and 5, identified by "Stages for JAN Procedure," indicate the hierarchical grouping of superintendent judgments into clusters at significant stages of the process.

The policies of the individual judges are shown in Tables 6 and 8 with standard beta weight decimal values. The policies of Group One and Group Two are shown in Table 9. The values in parenthesis show the ranks of each variable as judged by the cluster of superintendents.

Appendix A contains tables showing mean and standard deviation of the judgments of each superintendent. Correlations between the criterion judgment (rating) and the profile variables are also provided in Appendix A.

Research Question 1:

Did superintendents in Group One cluster into more than one policy group?

The first group of superintendents used information from five environmental conditions. The question was intended to determine whether the superintendents used the information contained in the five cues in like manner when they made their criterion decisions or if they combined the cue information in a variety of decision making patterns.

Table 4 shows that at stage one, where each rater was considered a single system, that is, where each held a separate mental construct of successful management, the R^2 value indicated a high level of

Table 4

Stages of the JAN Procedure
Group One

Stage	Number of Policies	R^2	Successive R^2 Drop	Accumulated R^2 Drop
1	33	.8399	--	--
2	32	.8396	.0002	.0002
3	31	.8393	.0003	.0006
4	30	.8390	.0004	.0009
5	29	.8386	.0004	.0013
6	28	.8382	.0004	.0017
7	27	.8377	.0005	.0022
8	26	.8300	.0076	.0098
9	25	.8293	.0007	.0105
10	24	.8286	.0007	.0113
11	23	.8278	.0009	.0121
12	22	.8267	.0011	.0132
13	21	.8254	.0012	.0145
14	20	.8241	.0013	.0157
15	19	.8117	.0125	.0282
16	18	.8103	.0014	.0296
17	17	.8087	.0016	.0312
18	16	.8070	.0017	.0329
19	15	.8053	.0017	.0346
20	14	.8030	.0023	.0369
21	13	.8007	.0023	.0391
22	12	.7972	.0035	.0426
23	11	.7922	.0050	.0477
24	10	.7871	.0051	.0528
25	9	.7808	.0063	.0591
26	8	.7737	.0071	.0062
27	7	.7668	.0069	.0731
28	6	.7531	.0137	.0868
29	5	.7387	.0144	.1011
30	4	.7209	.0178	.1189
31	3	.7081	.0128	.1317
32	2	.7016	.0066	.1383
33	1	.6928	.0088	.1471

consistency in each judge's policy. Furthermore, at each successive stage in the hierarchical grouping process the R^2 dropped slowly. There was no successive drop in predictability (R^2) of .05 or more at any one stage. This confirmed that there was only one policy shared by all superintendents in the group.

Research Question 2:

Did superintendents in Group Two, who had two additional pieces of information about environmental conditions, reveal more than one policy when predicting the successful management of school systems?

Table 5 shows results for Group Two similar to those of Group One. Rater consistency as shown in the R^2 value began and remained high throughout the grouping process. At no point was there a drop of .05 or more in judgment predictability, which confirmed the existence of a single policy shared by all 32 superintendents in the group.

Research Question 3:

How did the superintendents in Group One weigh the importance of each of the five environmental conditions in their prediction of the successful management of schools?

The purpose of this question was to discover if the superintendents perceived each of the influences on school manageability as equal in importance or if they judged that one or more of the conditions was more important than another.

Judgment analysis (JAN) of the data from each of the superintendent's judgments was employed. Table 6 shows the policies of each superintendent. The decimal numerals are the standard beta weights.

Table 5

Stages of the JAN Procedure
Group Two

Stage	Number of Policies	R^2	Successive R^2 Drop	Accumulated R^2 Drop
1	32	.7780	--	--
2	31	.7778	.0002	.0002
3	30	.7775	.0003	.0005
4	29	.7770	.0005	.0010
5	28	.7765	.0005	.0015
6	27	.7760	.0005	.0021
7	26	.7754	.0006	.0027
8	25	.7745	.0008	.0035
9	24	.7736	.0009	.0044
10	23	.7727	.0010	.0053
11	22	.7717	.0010	.0063
12	21	.7706	.0011	.0074
13	20	.7693	.0013	.0007
14	19	.7679	.0014	.0102
15	18	.7664	.0014	.0116
16	17	.7648	.0016	.0132
17	16	.7630	.0018	.0150
18	15	.7612	.0018	.0168
19	14	.7591	.0021	.0189
20	13	.7569	.0022	.0211
21	12	.7546	.0023	.0234
22	11	.7519	.0027	.0261
23	10	.7486	.0033	.0295
24	9	.7451	.0035	.0329
25	8	.7413	.0038	.0367
26	7	.7374	.0039	.0406
27	6	.7320	.0054	.0461
28	5	.7253	.0067	.0527
29	4	.7181	.0072	.0599
30	3	.7035	.0146	.0745
31	2	.6775	.0260	.1005
32	1	.6466	.0309	.1315

Table 6

Policies (Beta Weights) for Individual Raters
Group One (5 Variables)

	Environmental Conditions					
Judge	1 TTM	2 CAI	3 TPDM	4 DIGS	5 CAB	R^2
1	.26	.39	-.03	-.02	.59	.7776
2	.51	.20	.32	-.01	.30	.7125
3	.10	.05	.13	.11	.89	.8664
4	.10	.85	.09	-.03	.18	.9184
5	.45	.47	.28	-.02	.25	.9001
6	.30	.17	.30	.13	.65	.8156
7	.39	.35	.08	.00	.59	.9082
8	.35	.33	.22	.35	.45	.8978
9	.63	.33	.02	.00	.33	.9168
10	.25	.08	.08	-.01	.85	.9070
11	.31	.17	.06	-.25	.60	.6912
12	.58	.34	.09	.06	.34	.9026
13	.43	.25	.21	.02	.57	.8594
14	.42	.15	.16	.01	.63	.8139
15	.51	.41	.05	.12	.28	.8343
16	.36	.27	.34	-.13	.47	.7571
17	.34	.15	.20	.02	.69	.8268
18	.30	.18	.12	-.03	.68	.7526
19	.65	.04	.18	.02	.54	.9252
20	.58	.14	.10	-.01	.58	.9166
21	.36	.17	.07	.21	.63	.7784
22	.25	.35	.30	.49	.26	.8670
23	.45	.24	.26	.20	.42	.7998
24	.51	.11	-.04	-.01	.50	.6734
25	.32	.35	.16	.10	.55	.8231
26	.75	.09	.22	.05	.26	.8618
27	.51	.40	.12	.19	.33	.9358
28	.37	.42	.28	.13	.42	.9052
29	.30	.18	.12	-.47	.48	.6862
30	.68	.23	.12	-.02	.30	.8829
31	.49	.40	.25	.07	.20	.8237
32	.19	.53	.00	-.22	.54	.8555
33	.40	.46	.25	.21	.24	.8928

The use each judge makes of each variable in his decision process is indicated by the magnitude of the number in its deviation from zero. For example, judge (superintendent) one placed most weight or importance on cue five (community attitude toward budget increases) when making his ratings or decisions. His next greatest weighting was on the second cue (climate for innovation). The third most used cue by judge one was trust among teachers and management. The very small negative weighting of cues three and four by this same superintendent indicates that he did not use the information in these cues to any great extent when making his judgments. There is no way of telling for sure whether he thought the information in cues three and four was unimportant or if he just ignored it.

Table 7

Combined Policy (Beta Weights) for Group One

	Cues (Environmental Conditions)					
Policy Number	1 TTM	2 CAI	3 TPDM	4 DIGS	5 CAB	R^2
1	.3953	.2734	.1484	.0336	.4630	.6928
Rank	(2)	(3)	(4)	(5)	(1)	

Table 7 shows the single policy for Group One. The beta weights and their rankings shown in the parentheses reveal that the raters judged the fifth cue (community attitude toward budget increases) as the one most important influence on the probability of successfully

managing a school system. The next most important factor is trust between teachers and management and the third highest in rater ranking was climate for innovation. The relatively lesser emphasis on teacher participation in decision making and demands of interests groups suggests that the raters made minor use of these factors in making their probability decisions.

Research Question 4:

Did the addition of two information cues affect the judgments of superintendents in Group Two? The question may be stated otherwise as: Were the decisions of superintendents affected when faced with declines in student enrollment and declines in financial resources?

The answer to Research Question 4 was found by comparing the data in Tables 6 and 8 and also in Table 9, which contains the data for each of the two group policies.

The most striking data in Table 8 are the numerical weights the superintendents gave to the two decline variables: decline in student enrollment (DSE) and decline in financial resources (DFR). Although slightly greater weight was given to decline in student enrollment, the overall use of these two factors by superintendents in judging the probability of successfully managing a school district was quite low. Except for superintendent two the R^2 values are high, indicating that each superintendent employed a consistent policy in judging the 75 environmental profiles. It is possible that one superintendent whose R^2 value fell to .3443 engaged in random rating of the profiles. Given the considerable divergence of this one subject from the judgment

Table 8

Policies (Beta Weights) for Individual Raters
Group Two (7 Variables)

	Environmental Conditions							
Judge	1 TTM	2 CAI	3 TPDM	4 DIGS	5 CAB	6 DSE	7 DRF	R^2
1	.29	.12	.19	.06	.73	.09	.00	.8909
2	.22	.32	.27	.02	-.06	-.07	.19	.3443
3	.41	.19	.37	.12	.26	.10	.06	.7106
4	.63	.25	.11	.11	.24	.27	.03	.8738
5	.47	.27	.24	.06	.33	.22	.13	.7927
6	.55	.13	.16	.01	.52	.06	-.01	.9044
7	.42	.21	.22	.30	.33	.10	.03	.8022
8	.36	.14	.28	.17	.51	.29	.09	.8299
9	.44	.31	.24	.10	.36	.11	.04	.8539
10	.79	-.02	-.04	.05	.35	.07	.01	.8538
11	.33	.25	.34	-.25	.45	.18	.16	.7505
12	.66	.10	.05	.01	.45	.06	.08	.8828
13	.45	.17	.11	-.06	.55	.15	.08	.7793
14	.22	.10	.12	-.16	.72	.03	.11	.7619
15	.38	.41	.23	.00	.35	.14	.02	.8349
16	.34	.38	.17	.06	.27	-.05	-.05	.7063
17	.51	.24	.15	.06	.44	.23	.14	.8616
18	.76	.14	.04	-.10	.32	.15	.07	.9223
19	.55	.27	.26	.07	.20	-.04	-.03	.8684
20	.25	.27	.29	.29	.46	.12	.03	.8532
21	.21	.28	.18	-.06	.47	.15	-.04	.5713
22	.51	.20	.27	.07	.31	.20	.03	.7735
23	.43	.42	.25	.21	.17	.10	.05	.8984
24	.63	.33	.01	.04	.14	.08	.03	.8208
25	.68	.10	.16	-.0	.29	.04	-.01	.8178
26	.75	.18	.02	-.04	.20	.00	-.03	.8761
27	.74	.09	.07	.05	.28	.02	.02	.8719
28	.67	.10	.13	-.01	.37	.03	-.01	.8584
29	.44	.42	.14	-.04	.34	.12	.04	.8560
30	.34	.21	.26	.17	.38	.06	.17	.6691
31	.69	.20	.15	-.11	.17	.04	-.09	.8470
32	.64	.23	.00	-.16	.16	.01	.00	.7012

predictability of the other 31 superintendents, little credibility can be allowed to his ratings.

Table 9

Combined Group Policy (Beta Weights) for Group One and Group Two

	Environmental Conditions							
	1 TTM	2 CAI	3 TPDM	4 DIGS	5 CAB	6 DSE	7 DRF	R^2
Group 1	.3953	.2734	.1484	.0336	.4630			.6928
Rank	(2)	(3)	(4)	(5)	(1)			
Group 2	.4739	.2128	.1625	.0278	.3189	.0898	.0468	.6464
Rank	(1)	(3)	(4)	(7)	(2)	(5)	(6)	

More information about the influence of the two decline variables on the combined judgment policy of the superintendents in Group Two is shown by the data in Table 9. The very low beta weights for cues six and seven indicate that the information from these cues was of relatively minor importance to the judgment decisions of this group. In light of the influence of the other variables, cues six and seven did not make a unique contribution to the predictability of decisions made by the group. No correlation of beta weights can be made between the two separate groups but there are some similarities and differences in rank order.

Group Two judged trust between teachers and management as the greatest influence on probability of successfully managing a school system. Community attitude toward budget increases was the second most

important factor in Group Two. The other five variables seemed to carry relatively little weight with the raters.

Except for the reversal of beta weight rank for cues one and five, there appears to be very little difference between the rater policies for Group One and Group Two.

Demographic Data

The study made no demographic analysis of the data. A few questions were asked in order to satisfy the researcher's interest in whether the participants had had similar experience.

Table 10
Demographic Data

	Mean Years as Superintendent	Experienced Decline in Enrollment	Experienced Resource Decline	
			Percent	Mean Percent of Resource Decline
Group I N=33	10.6	85%	49%	12%
Group II N=32	10.0	66%	38%	10%

The two groups of superintendents had about the same number of years experience in the position of superintendent. Eighty-five percent of the superintendents in Group One had experienced a decline in enrollment at some time, while only 66 percent of the superintendents in Group Two had the same experience. Similarly, about

one-half the superintendents in Group One had managed resource decline at some point in their career. Thirty-eight percent of the superintendents in Group Two had experience with resource decline. The mean percent of decline in resources was 12 percent for Group One and 10 percent for Group Two.

Summary

Judgment analysis was applied to two groups of Montana school superintendents. Both groups used the information contained in cues in a highly consistent and predictable fashion. In each group there was only one policy that determined the probability of successfully managing a school system.

The two group policies contained similar patterns of information use when making judgments. Both groups viewed the level of trust between teachers and management and attitude of the community toward budget increases as the two most important factors to be weighed in the decision. The other three information cues that were available to both groups were used to a lesser degree.

Cues six and seven were used very little and did not make a unique contribution to predicting the decision making behavior of superintendents in Group Two. Participants in both groups had about the same average years of experience in the position of superintendent. Over two-thirds of the superintendents in both groups had experienced some decline in resources and enrollment.

CHAPTER 5

CONCLUSIONS

Introduction

This chapter contains a record of the researcher's conclusions and a discussion of how the decisions and decision making processes of Montana superintendents compare with the research and recommendations of scholars as found in the literature. Implications of the conclusions and recommendation for further study are also presented.

Conclusions

1. The decision making simulation used in this study demonstrated that superintendents of Montana schools use information in a consistent, predictable fashion when making decisions about managing school systems. For all but a few superintendents, over 75 percent of the variance of their decisions was accounted for by the five and seven variables respectively. The homogeneity of their decisions is striking. The drop in predictability in each successive stage of the JAN clustering process was small. In Group One only 15 percent of the predictability was lost after combining the decisions of all the superintendents into one equation. The cumulative drop in predictability for Group Two was even less.

2. The existence of a single judgment policy in each group provided evidence that superintendents of large and medium sized school districts in Montana relied on the cue information in systematic patterns; Tables 6 and 8 showed that superintendents in both groups cited the community's attitude toward budget increases and trust between teachers and management as the chief influences on their judgments. The superintendents see the climate in the district for innovation and teacher participation in decision making as lesser influences on successful management, and they virtually dismissed information about pressure from special interest groups.

3. Cues six and seven did not make a unique contribution to predicting the decision making behavior of the superintendents in this study. There was, in fact, less overall predictability of decision making in Group Two where additional information was available to the superintendents; nonetheless, the addition of two additional information cues may have affected the pattern of information use. Table 9 data suggests that superintendents, upon realizing that budget increases were unlikely in declining environments, depended more on the support of a cooperative teaching staff.

A slight decline in predictability (R^2) from Group Policy One to Group Policy Two suggests the possibility that the presence of additional information makes it more difficult for the superintendents to interpret and process the information in arriving at a judgment (March and Simon, 1958).

Another reason why cues six and seven may not have made a unique contribution to the predictability of superintendent decision making in

this study was discussed in the survey of literature. The decline cues in the simulation may have been perceived as a crisis in the short run only. The subjects were told in their instructions that the decline in enrollment might be expected to continue for at least a few years. However, there was no similar information suggested for the decline in financial resources cue. The raters, faced with uncertainty about long-term outcome, might have decided to "weather the storm" in part by making decisions that would maintain the support and good will of the client community (Miller and Starr, 1967; Etzioni, 1968; Vroom and Yetton, 1973; Cyert and March, 1963).

4. From the perspective of Whetten's (1980, 1981) response to decline categories, there is reason to doubt that the superintendents in Group Two of this study show an inclination to seek "generating" innovative solutions to the problems created by decline. Table 9 shows that superintendents in Group Two relied less on information from the second cue, climate-attitude toward innovation, than the superintendents in Group One. If the raters in Group Two were inclined to see promise in trying creative ideas in their circumstances, one might have expected them to give greater rank to this particular cue. The literature that relates the history of managing declining school systems consistently reports the presence of uncertainty, stress and organizational conflict (Levine, 1978; Marsh, 1974 and Crespo and Haché, 1982). It is not surprising that most managers would try to reduce organizational turbulence by making small adjustments rather than risk creating greater problems by introducing major changes in practice or policy.

As reported by Whetten (1981), the loss of discretionary resources is a serious problem for managers because most of them are conditioned by training and experience to cushion uncertainty and obtain loyalty and cooperation through internal allocation procedures. For this reason it is a little surprising that the participants in Group Two of the study did not weigh the importance of the decline information more strongly when making their judgment ratings. At best, one can speculate that either the superintendents were only mildly impressed by the threat of short-term decline or they had difficulty processing the additional information. The latter case is unlikely, however, because of the high consistency of these decisions.

Historically, education in Montana has not faced widespread or long-term decline in enrollments or financial resources. It may be that the superintendents who participated in this study were not able to internalize a major management crisis from the simulated environments created for this research.

Implications

The data from this study has implications for several groups. Those who seek a research methodology to study how people use information to make decisions will find the JAN model to be a reliable tool. For those who train school administrators, training in the skills of problem solving and decision making should be required with competency developed in practicum with mentors.

For scholars in the field of organizational theory, the study tends to support previous research both in decision theory and the

management of decline. For superintendents and school boards, the study holds an admonition to weigh all information at hand before making decisions. The study also suggests that school district policy makers should know and examine their own biases and limits in the use of information, perhaps avoiding management errors by formulating contingency policy positions before crisis situations develop.

Recommendations for Further Study

One cannot be sure, but there is a possibility that the perception of decline that was created by the information cues in this study was one of short run. A follow-up study that clearly establishes long-term and profound decline might yield different, less conservative judgment policies.

It would also be valuable to know whether administrators trained to be systematic decision makers would apply their skills to a simulation of this sort. The question of whether Montana school administrators are unique in their judgment policies could be answered with a replication of the study using subjects from other states, or comparisons could be made with the decisions of superintendents in special geographical areas such as urban centers or foreign countries.

This study included no females or minorities as subjects. Differences in decision making might be found by sex or culture if the study were replicated.

Finally, the data from the two groups in the study can be compared only in terms of the relationship that the subjects, as Montana superintendents in large and medium schools, have to each other. The

limited demographic data, uniform high predictability of their decisions, and singular judgment policies suggests that the subjects are a homogeneous group. Any doubt could be removed by a study that applied two treatments to a single population, the second treatment containing additional information cues.

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APPENDICES

APPENDIX A

JAN TABLES

Table 11

Correlations Between the Judges' Ratings and the Profile Variables
Group One

	Profile Variables (Environmental Conditions)				
Judge	1 TTM	2 CAI	3 TPDM	4 DIGS	5 CAB
1	.54	.60	.02	-.01	.69
2	.70	.53	.39	.10	.40
3	.28	.26	.14	.08	.90
4	.56	.93	.17	.10	.32
5	.76	.76	.37	.12	.38
6	.52	.46	.36	.19	.70
7	.67	.64	.15	.04	.70
8	.63	.65	.37	.43	.52
9	.85	.70	.12	.05	.47
10	.43	.34	.09	-.04	.90
11	.48	.38	.03	-.25	.69
12	.82	.70	.20	.13	.47
13	.66	.57	.27	.08	.66
14	.62	.47	.20	.04	.71
15	.77	.73	.17	.19	.40
16	.60	.54	.36	-.02	.57
17	.55	.45	.24	.05	.75
18	.50	.44	.14	-.02	.75
19	.78	.48	.24	.06	.64
20	.75	.52	.16	.01	.69
21	.56	.48	.17	.21	.69
22	.52	.61	.49	.60	.30
23	.67	.58	.37	.28	.50
24	.64	.44	.01	-.03	.60
25	.61	.62	.24	.16	.64
26	.86	.53	.32	.13	.37
27	.79	.75	.26	.27	.45
28	.68	.71	.39	.25	.51
29	.45	.35	.03	-.44	.59
30	.86	.63	.20	.05	.44
31	.76	.71	.36	.19	.32
32	.53	.67	-.01	-.18	.67
33	.71	.76	.40	.34	.34

Table 12

Mean and Standard Deviation of Each Rater's Criterion Rating
Group One

Judge	Mean	Standard Deviation
1	47.47	23.21
2	46.27	21.40
3	48.67	24.55
4	52.16	24.16
5	44.80	22.61
6	43.33	20.15
7	49.47	23.49
8	48.12	16.52
9	49.81	22.64
10	50.80	22.61
11	47.36	24.65
12	48.33	23.04
13	48.93	21.76
14	46.87	22.09
15	48.40	28.46
16	39.33	17.93
17	52.24	20.13
18	51.11	29.78
19	52.09	23.92
20	46.40	22.13
21	46.87	22.96
22	49.07	26.48
23	48.87	20.99
24	56.53	20.00
25	48.67	23.43
26	44.53	24.17
27	49.40	20.26
28	46.67	18.96
29	37.20	26.66
30	52.40	22.44
31	47.13	24.57
32	43.60	20.95
33	52.80	18.59

$\bar{x}$ of $\bar{x}$ = 48.06.

Table 13

Mean and Standard Deviation of Each Rater's Criterion Rating
Group Two

Judge	Mean	Standard Deviation
1	45.00	20.62
2	61.73	43.61
3	43.19	23.82
4	45.53	26.36
5	42.33	25.79
6	47.49	20.35
7	52.47	21.88
8	45.80	19.87
9	53.13	18.81
10	50.93	23.45
11	43.67	25.90
12	54.20	30.88
13	46.00	20.83
14	45.80	22.58
15	53.60	24.24
16	53.20	18.97
17	41.80	19.98
18	45.83	25.43
19	49.73	20.44
20	52.87	18.33
21	54.80	20.47
22	49.47	22.37
23	47.32	22.84
24	50.99	25.26
25	49.73	20.69
26	44.80	21.59
27	53.43	26.45
28	47.08	19.14
29	53.67	22.94
30	59.70	23.11
31	50.87	26.34
32	47.27	21.50

$\bar{x}$ of $\bar{x}$ = 49.48.

Table 14

Correlations Between the Judges' Ratings and the Profile Variables
Group Two

	Profile Variables (Environmental Conditions)						
Judge	1 TTM	2 CAI	3 TPDM	4 DIGS	5 CAB	6 DSE	7 DRF
1	.57	.47	.33	.18	.83	-.04	-.07
2	.40	.45	.34	-.18	.11	-.14	.06
3	.65	.53	.54	.33	.42	.00	-.12
4	.83	.63	.32	.26	.43	.14	-.17
5	.71	.60	.40	.22	.51	.09	-.05
6	.78	.57	.32	.17	.69	-.06	-.13
7	.69	.59	.45	.46	.49	-.03	-.16
8	.60	.48	.46	.31	.62	.17	-.07
9	.74	.66	.43	.29	.55	-.02	-.13
10	.86	.47	.14	.14	.54	-.05	-.12
11	.56	.48	.37	-.08	.61	.07	.08
12	.81	.54	.21	.12	.64	-.07	-.04
13	.65	.50	.23	.04	.70	.02	-.01
14	.43	.36	.16	-.09	.81	-.08	.11
15	.71	.70	.39	.20	.55	.00	-.13
16	.67	.69	.33	.25	.46	-.17	-.18
17	.74	.59	.32	.18	.62	.08	-.02
18	.88	.57	.18	.02	.54	.02	-.06
19	.81	.68	.45	.31	.42	-.15	-.21
20	.59	.60	.50	.46	.59	-.02	-.14
21	.49	.50	.28	.08	.58	.05	-.11
22	.73	.56	.44	.25	.48	.09	-.15
23	.75	.75	.47	.43	.38	-.03	-.17
24	.84	.69	.21	.20	.37	-.06	-.15
25	.83	.55	.33	.16	.49	-.06	-.16
26	.90	.63	.20	.13	.43	-.12	-.19
27	.88	.57	.26	.20	.49	-.10	-.14
28	.83	.55	.30	.15	.57	-.09	-.15
29	.75	.73	.30	.14	.55	-.03	-.10
30	.59	.52	.42	.31	.53	-.06	.01
31	.87	.62	.30	.10	.39	-.06	-.24
32	.78	.58	.12	-.02	.38	-.10	-.11

APPENDIX B

INSTRUCTIONS TO PARTICIPANTS IN THE STUDY

A SIMULATION OF SUPERINTENDENT DECISION MAKING

Creating or Maintaining a High Quality Education Program in Changing Environments

School System Environment Packet

Introduction

One object of educational research is to formulate theories that explain and predict human behavior in organizational settings. It is not always possible or desirable to conduct experiments in real systems. In those situations, such as we have here, simulations have proven to be accurate representations of real life conditions.

As a participant in this simulation you will make 75 judgments. There are 75 school system environment profiles included in this packet. These profiles provide you with five or seven pieces of information about certain conditions in a hypothetical school district. The information provided in each profile is explained in the next section.

For purposes of this simulation you are to make your judgments from the point of view of the superintendent of schools of a hypothetical school district. You may use as a school context the district with which you are now associated or an imaginary one. It is important that you maintain a consistent reference point throughout the simulation. To summarize: Given the information you are provided in each profile, make a decision about the probability of creating a high quality of education in the district or if high quality is already in place maintain it in light of the environmental information provided by each profile.

Information Cues

Purpose of this research is to determine how different kinds of information about the school system environment affects how

superintendents judge the prospects of creating or maintaining a high quality education program in the system. Obviously there are many factors, some major, some minor, that influence the manageability of a district. It simply is not possible to include them all nor is it necessary. For the purposes of this study we have selected a total of five or seven variables that previous studies have shown to be important to consider when one is thinking about the problems of assuring a first rate education program for students. The variables which we shall refer to as information cues are:

1. Level of trust between teachers and management
2. Climate-attitude in the district for innovation
3. Teacher participation in decisions related to program and policy
4. Demands from interest groups to maintain or provide more services
5. Attitude of the community toward general fund budget increases
6. Decline in finance resources available for district services from the previous year
7. Decline in student enrollment from the previous year

[Cues six and seven were included only in the packets of group two.]

In the following section is a description of each information cue and a couple of sample judgment ratings which illustrate how you go about the process of using the information to make judgments on the probability of maintaining a high quality education program. The environment profile that possesses the most favorable conditions in comparison to others also under consideration is appropriately assigned

a rating of 100. An environment with very poor conditions for maintaining a high quality education would be assigned a zero (0) or near zero.

After studying the cue descriptions that follow and the ranking procedure, your task will be to make 75 judgments and rank them on a 100 point scale.

PLEASE READ THE DESCRIPTIONS OF SCHOOL ENVIRONMENT INFORMATION CAREFULLY

SCHOOL SYSTEM ENVIRONMENT INFORMATION

Cue 1

Level of Trust Between Teachers and Management

Trust between teachers and management is a composite variable inasmuch as trust is measured by several criteria. A district in which a high trust level exists is characterized by the following relationships between teachers and management.

1. Open and honest communication
2. Cooperation
3. Fairness and consistency
4. Willingness to take risks

Low trust is characterized by:

1. A lack of open and honest communication
2. Unwillingness to cooperate

3. Suspicion
4. Conflict
5. Excessive legalism

Cue 2

The Climate-Attitude in the District for Innovation

This variable is also a composite of several conditions within a school system.

A district with a high innovative climate possesses the following criteria:

1. The expression and pursuit of visionary goals
2. The presence of new curricular and staff development programs
3. Flexibility of the staff and school board toward adjusting past practices
4. The existence of risk taking behavior in seeking better ways to do things

A low innovative climate is defined by such features as:

1. Extreme caution in trying anything new or different
2. Distrust of novel approaches to problem solving
3. Strong reliance on tradition or institutional procedures regardless of their efficacy.

Cue 3

Teacher Participation in Decisions Related to Program and Policy

A school district in which there is a high level of teacher participation in decision making is defined by the right gained through

past practice or union contract to have a substantive role in making decisions related to such things as:

1. Curriculum planning and textbook selection
2. Inservice
3. Student personnel policies
4. School calendar
5. Class size

A school district in which there is a very low level of teacher participation in decision making related to program and policy is characterized by a strong top down leadership and decision making structure in which most program and policy decisions are made by the administration and school board.

Cue 4

Demands from Interest Groups to Maintain or Provide More Services

This information cue is defined by the number and intensity of public activism in school related issues. Pressure groups may have their origin within the school staff such as teacher organizations or curriculum groups. They also may be identified as parents, nonparents, taxpayers, political action groups or religious bodies. Individuals as well as groups may be involved and the attitude or posture of the pressure group may range from friendly and supportive to hostile or even destructive. At issue in this environmental predictor is the pressure on the systems management to do or not to do something.

Some examples of a district under high pressure by an interest group are:

1. The booster club demanding a winning interscholastic sports program.

2. A parent group insisting on an expanded program for gifted and/or special education students.

3. Resistance to a proposal to move the distance-from-school limit for free bus service from one to three miles.

4. An insistence from some families that vocational agriculture curriculum offerings be provided.

5. A demand from a veterans organization that all students be taught "Americanism."

A district in which a very low level of pressure from special interest groups exists is noted by a passive acceptance in the community and staff of the decisions and services that are provided by the board of education.

Cue 5

The Attitude of the Community Toward General Fund Budget Increases

A community with a highly positive attitude toward budget increases for the schools would be identified by a consistent record of support for such things as:

1. Local school operation levies

2. Building bond elections

3. New program services such as libraries, gifted education and outdoor education

4. Teacher salary increases

A community with a very negative attitude toward budget increases for the schools would be noted by such circumstances as:

1. Consistent failure of operation levies and bond issues

2. Strong pressure from taxpayer groups to reduce expenditures

3. Frequent news articles or letters to the editor criticizing school expenditures

Cue 6

Decline in Enrollment

The information on declining enrollment will vary in the profiles from zero (0) to minus ten (-10) percent from the previous year. One can assume that there is little likelihood that there will be any turnabout in enrollment and the rate of decline in the next few years will probably continue to vary from zero to -10 percent per year. This note of uncertainty is deliberately present to approximate real life conditions when a district is experiencing enrollment decline.

Cue 7

Decline in Financial Resources

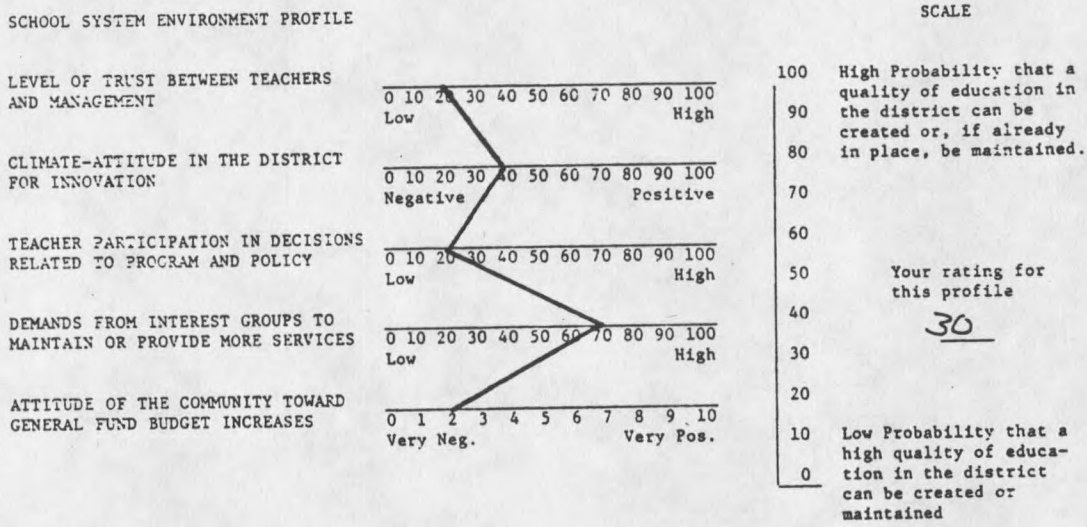
The information provided on declining resources is intended to imply a real decline in the amount of money available to run the district from the previous year. For example, say a district's budget for year one is ten million dollars ($10,000,000). A decline of five (5) percent in financial resources would mean the next year's budget would be $9,500,000. Assume that inflation, loss of average number belonging, reductions in special program funding, etc., are included in the percentage of declining resources figure.

There are five pieces of information about this school system environment given to you.

1. The level of trust between teachers and management is rated at the 20th percentile indicating a fairly low level of trust.

2. The climate-attitude in the district for innovation is rated at the 40th percentile, slightly below average.

Sample School District Environment Profile Group 1



3. Teacher participation in decisions related to program and policy is rated at the 20th percentile indicating a fairly low level of involvement in program and policy decisions.

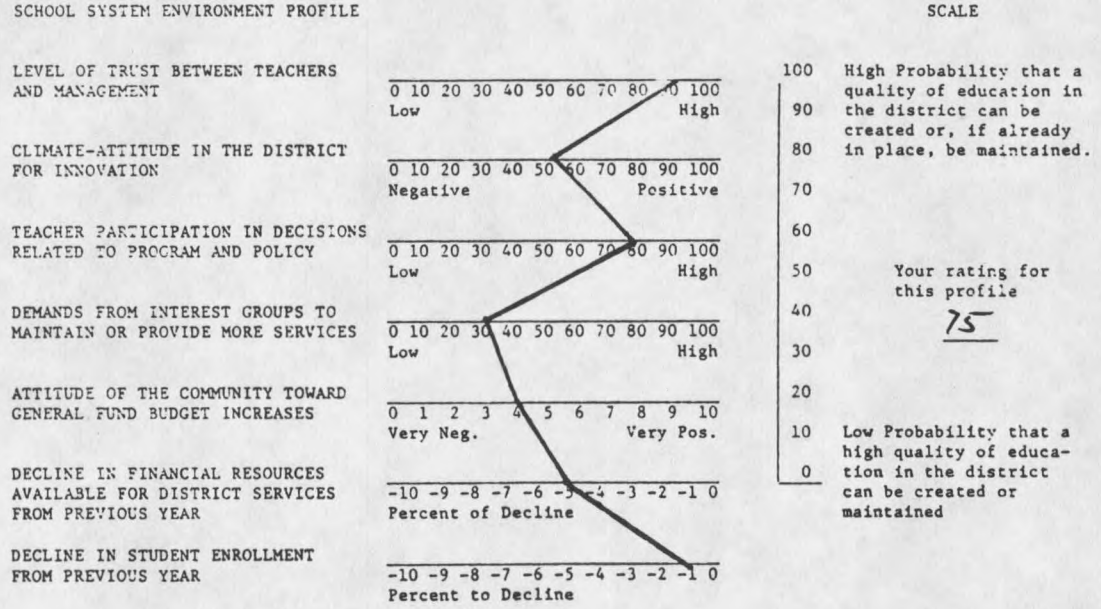
4. Demands from interest groups to maintain or provide more services is at the 70th percentile, somewhat above what would be considered normal.

5. The attitude of the community toward general fund budget increases is at the 20th percentile, which reflects a negative attitude.

After studying this profile, a judgment is made on the scale predicting the probability that a high quality of education in the district can be created, or if already in place, be maintained. For this sample profile a rank of 30 was made. This would mean that the

rater judged that given these conditions, a manager only had about one chance in three of successfully creating or maintaining a high quality education in the school system.

Sample School District Environment Profile Group 2



There are seven pieces of information about this school system environment given to you.

1. The level of trust between teachers and management is at a high 90 percent level.

2. The climate-attitude in the district for innovation is at the 50th percent level, which is average or normal for school districts.

3. Teacher participation in decisions is rated at the 80th percentile, indicating a fairly high level of involvement.

4. Demands from interest groups to maintain or provide more services is at the 30 percent level.

5. Attitude of the community toward budget increases is rated at the 40th percentile, slightly below average.

6. Decline in financial resources from the previous year is 5 percent.

7. Student enrollment has dropped one percent from the previous year.

After studying this profile, a judgment is made that there is a 75 percent, or three in four, chance that a high quality education in the district can be created, or if already in existence, be maintained given the environmental conditions in the profile.

Final Instructions for the Simulation

It is important that you complete the profiles in the order they are presented in the packet. You may review the information explaining the information cues at any time.

Write your rating (score) for each profile in the space provided next to the scale.

When you are finished, please mail this booklet in the envelope provided.

Thank you for your contribution to this research. A synopsis of the study will be mailed to you upon its completion.

Participant Information

Before beginning the simulation, please take a few moments to fill in this section. You may be assured of confidentiality of your responses; however, some background information about you is necessary in order to interpret your responses.

1. Name _____

2. Total number of years you have worked as a public school administrator? _____ 3. Number of years you have worked as Superintendent of Schools? _____

4. Has any district in which you worked ever experienced a decline in enrollment that lasted more than two years? _____

5. Has any district in which you worked ever experienced a decline in total financial resources from any one year to another? _____

6. If your answer in question 5 is yes, what percentage of decline did the district experience? _____

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