1964

State regulation and the incentive for exceptional managerial performance in investor-owned public utilities

Clifford Ellsworth Smith
Iowa State University

STATE REGULATION AND THE INCENTIVE FOR EXCEPTIONAL MANAGERIAL PERFORMANCE IN INVESTOR-OWNED PUBLIC UTILITIES

by

Clifford Ellsworth Smith

A Dissertation Submitted to the
Graduate Faculty in Partial Fulfillment of
The Requirements for the Degree of
DOCTOR OF PHILOSOPHY

Major Subject: Engineering Valuation

Approved:

Signature was redacted for privacy.

In Charge of Major Work

Signature was redacted for privacy.

Head of Major Department

Signature was redacted for privacy.

Dean of Graduate College

Iowa State University
Of Science and Technology
Ames, Iowa

1964

TABLE OF CONTENTS

INTRODUCTION

The regulation of business is, in all probability, as old as man himself. According to Koontz and Gable (61, p. 5), many economic functions were regulated by the government in ancient Greece and there was a code of law governing economic relations which was developed under the Roman Empire. Early governments and even the early Catholic Church derived and applied many principles to business.

The merchant guilds and the craft guilds of the Middle Ages represented a type of regulation. Merchant guilds were known in the ninth century, but their real rise in popularity dates from the eleventh century, and by 1300 it is reported that they could be found in practically every town in England and Western Europe (61, p. 6). About this same time the towns began performing a regulatory function and

> . . . between roughly 1400 and 1550, besides protecting guild monopolies, towns undertook the licensing of traders and the regulation of the time, place, buildings, and commodities of markets. (61, p. 6)

During the same period, there was a gradual transition from feudalism to a nation-state system. In time it was the national government that formulated extensive regulations so as to encourage manufacture for export and in order to secure a more favorable balance of trade.

Influence of Regulation on American Constitution

Among the causes that led to the American Revolution was the mercantilist policies of England (61). The American colonists were very dissatisfied with a number of the restrictions imposed upon them by the

mother country. They were forced to trade with England on English ships; they were relegated to being primarily a source of raw materials, for England forbade the importing of machinery into the colonies; and the tax policies seemed designed only to enrich the English treasury.

> Because the drives for economic freedom and for political independence were reactions against mercantilism and because both occurred at the same time, a prejudice against control over business by any government influenced the framers of the American Constitution and colored the character of early American business morality. (61, p. 8)

Adam Smith and "Self Regulation"

The same year that the American Colonies declared their independence, 1776, Adam Smith published his Wealth of Nations. Adam Smith believed that there were forces working within the market which would make all business self-regulating. The market would therefore be its own guardian. This "self-regulation" was assured by allowing each individual to be guided in his business actions by his own self interests and passions. Rather than destroy the market, this freedom would result in competition within the market which in turn would bring about results "which would be most agreeable to the interest of the whole society" (49, p. 39). Under competition all market prices would tend to equal their natural price, that price which would properly compensate each of the factors of production and assure continued production without providing an excess payment to any one factor.

> The natural price, therefore, is, as it were, the central price, to which the prices of all commodities are continually gravitating. Different accidents may sometimes keep them suspended a good deal above it, and sometimes force

> them down even somewhat below it. But whatever may be the obstacles which hinder them from settling in this center of repose and continuance, they are constantly tending towards it. (105, p. 102)

Public Utilities

The world of Adam Smith has been referred to as one of "atomistic competition" (49). The market since that time has changed. Although the market today is still influenced by competitive conditions, it is also characterized by the huge size of some of its participants.

> . . . giant corporations and equally giant labor unions obviously do not behave as if they were individual proprietors and workers. Their very bulk enables them to stand out against the pressures of competition, to disregard price signals, and to consider what their self-interest shall be in the long run rather than in the immediate press of each day's buying and selling. (49, p. 43)

An additional influence upon the market mechanism has been the growth of governmental intervention, including the classification of certain industries as "natural monopolies" and as industries which are "affected with the public interest."

Gas, electric, and telephone utilities

Three industries conceived in the late 1800's, were soon considered "natural monopolies". They are the gas, electric, and telephone industries. The first commercial gas company to distribute manufactured gas was established in Baltimore in 1816. Gas was used primarily for lighting streets and public buildings. The price of gas was very expensive, due in part to the fact that the industry was very competitive and many communities had more than one company supplying it gas service. This resulted in

the volume of business being small and the overhead costs high (9, p. 26).

The real development of the gas industry dates from the 1880's when the newly developed electric industry brought a new type of competition into the lighting field. The commercial exploitation of natural gas came after 1870, and its use was expanded after 1925 due to extension of the pipelines.

The telephone industry had its beginning in 1875 with the first successful experiment by Alexander Graham Bell, and in 1877, the Bell Telephone Company was organized in Massachusetts.

The electric lighting industry traces its beginnings back to the successful development of the carbon-filament lamp by Edison in 1879. In 1882 the "first central station distributing electric energy, constructed by Edison at Pearl Street in New York City, began operations." (9, p. 31) Each of these industries has exhibited phenomenal growth since their initial beginning.

Characteristics of public utilities

A number of conditions influenced the market structure within each of these industries resulting in their being identified as "public utilities". First, there was a special public importance or necessity for the type of service supplied by these enterprises. Second, these firms provided services to a severely localized and restricted market. Third, due to the large investments required in production and distribution facilities, there existed conditions of decreasing costs and economies of scale beyond those experienced in other businesses, and this emphasized the benefits of expanded production facilities and a need for increased sales (19).

Competition within these industries, therefore, became destructive and failed to yield desirable benefits to society. The results were more often poor service at a high cost to the consumer while the competing companies received low profits or experienced losses.

Development of monopolistic market structure

The fight for survival in this competitive situation resulted in entrepreneurs adopting different tactics. Some companies achieved superiority within an area by pricing competition out of business. Other companies found it to their advantage to restrict competition by formal agreements regarding the division of the territory. At other times companies would merge their interests into one firm with control over the total territory. Some companies were able to negotiate exclusive franchises with a city or town thus providing some protection from competition. Whatever the action taken, the result was often a very profitable operation for the remaining firm due to its monopolistic position and monopolistic pricing policies.

Regulation of Public Utilities

Some local regulation resulted early in the history of these three industries due to their need to use the city streets and public places for the construction, maintenance, and operation of some of their facilities (p, p. 218). Local governments, in granting a franchise to a company, could require that certain procedures be followed. It was not unusual though for the local government to grant franchises to more than one company in an industry, believing that competition would be beneficial.

Failure of competition

The gas, electric and telephone industries failed to achieve, under competitive conditions, desirable social and economic results. While most people had a strong belief in the advantages of a competitive market structure and were distrustful of the monopolistic structure, the results within these industries did not speak well for competition. Local regulation and later state and federal regulation was turned to as a substitute for competition. It was believed that regulation would enable these three industries to expand and utilize large scale operations, and thereby benefit from the economies of scale. At the same time regulation would prevent destructive competition and provide the consumer with good service at a fair price while allowing the utility to earn a "fair return on their investment."

It was basically after the turn of the century that the fallacy of depending upon competition to protect the consumer and the ineffectiveness of local regulation became obvious to the legislators of a number of the states. State commissions were soon created with regulatory powers. Prior to 1870, these commissions were primarily advisory in nature. From 1870 to 1907 railroad commissions were often given the additional authorization to regulate the public utilities, and since 1907 this task of regulation has usually been assigned to a public service commission (9, p. 174).

Many states initiated regulatory legislation and activities early in the 1900's. The federal government stepped up its regulatory activities over the interstate activities of these industries by passing the Communications Act of 1934, the Public Utilities Act of 1935, and the Natural Gas

Act of 1938.

Regulation as a Substitute for Competition

In a competitive situation, an entrepreneur has the incentive to manage his business as efficiently as possible. The price he charges for the final product is supposedly determined in the competitive market and the more efficient his management, the higher his net profit. Any advantage one merchant may have over another is considered relatively short lived, as other entrepreneurs will enter the more profitable industries or assume the more profitable methods of operation, thus eliminating any advantage one entrepreneur may temporarily have over another. To remain in business, one must make a profit and this usually implies a continuing flow of innovations to enable one to stay ahead of competition. The consumer is thus the beneficiary in improved products and services at reasonable prices.

Today's enterprise is under the control of a decision making unit known as "management." This control group is often separate from the owners, otherwise known as investors or stockholders. Even so, a basic assumption in conventional price theory embodies an empirical generalization concerning the motivation, or guiding principle of action, of managers, (enterprisers) in providing and selling their product. This assumption is that any buyer or seller will act to maximize his aggregate profits.

Economists recognize that this assumption is an over simplification of reality, but the profit-maximization hypothesis seems to have represented fairly accurately the apparent ethics and behavior of

capitalism. Bain (4, p. 50) writes that

> . . . speaking of contemporary capitalism in a broad way, it still seems fair to say that the pursuit of monetary profit constitutes a main motivation or ordering principle of action for business enterprises generally, and that, subject to increasing limitations and restraints which actually modify the meaning of "maximizing a profit," profit maximization represents some sort of rough central tendency of endeavors.

In pursuing profit maximization, management is motivated to organize the enterprise and produce its service as efficiently as possible. It is constantly concerned with new developments in technology as well as production and product inovations which will enable the enterprise to keep ahead of competition.

There are many who believe regulation does not assure this type of management within Public Utilities, but, in fact, protects the inefficient and creates a tendency for all utilities to be no better than average.

Bonbright (19) identifies the four functions of public utility rates as

> . . . (1) the producer-motivation or capital-attraction function; (2) the efficiency-incentive function; (3) the demand-control or consumer-rationing function; and (4) the income-distribution function.

Referring to the second function he states that

> . . . these incentive-encouragement features of orthodox rate regulation are extremely crude, and one may suspect that they are very ineffective in comparison with the stimulation of direct and active competition. (19, p. 49)

Prof. Trebing recently wrote:

> Perhaps the most serious accusation to be leveled against the commission system in recent years is the charge that regulation stifles incentives for inovation and greater efficiency.

Prof. Bain (7, p. 595) in his text on Industrial Organization states that

> Existing public utility regulation is subject to a number of serious deficiencies as a means for securing the best in market performance from regulated industries, and cannot to date be considered an approximately ideal device of its type for furthering public welfare.

The argument is thus presented that regulation does not act as a substitute for competition. Consequently, "management" does not have the same incentive to manage the enterprise efficiently as would normally be expected under competitive conditions.

Corrective Measures Suggested

If regulation then fails to motivate management, how can this situation be remedied? One solution would be for the regulatory process to recognize managerial efficiency and performance. This might be done in a number of different ways, but an increase in the rate of return for the efficiently managed utility is a common suggestion. Other suggestions include non-monetary and psychological approaches to the motivation of management.

Bain, however (7, p. 630), suggests that . . .

> commissions charged with regulation of existing utilities should in general be given more power, so that instead of in large part simply limiting (or supporting) rates to cover average costs, they could in addition (under adequate legislative standards) control or establish the scale of operations, rate of output, and investments of regulated firms, to the end of securing social-optimal price-output adjustments. Only by thus increasing the regulatory powers of commissioners does it seem possible to compensate for the loss of private management incentive for efficiency, bold expansion, and so forth which results from the rigid control of rates and profits.

This last suggestion is repugnant to those who believe in economic freedom and the basic concepts of a competitive society. Many persons are also distrustful of increasing government regulation and control.

Lack of Information

The accusation has therefore been made that regulation has failed to motivate utility managers to strive for exceptional performance, and many suggestions for correcting this weakness have been offered. What seems to be missing however is a thorough understanding of the attitudes and opinions of those closest to the situation, that is the utility managers and the commissioners and their staff. There is a need for information regarding the influence of regulation upon managerial performance, and this information must come from those closest to the situation. If there is a weakness in the regulatory process, it must be recognized by these concerned individuals and properly identified before any satisfactory solution can be devised. There must also be some basis for agreement among the interested parties concerning the actual problem before there will be cooperation in achieving a satisfactory solution.

Research Proposed

The gas, electric, and telephone industries are of vital importance to our national economy. Any improvement in the regulatory process which would encourage an improvement of performance within these industries would be beneficial to all of society.

A need was recognized for research which would provide increased

understanding about the attitudes and opinions of utility managers and commissioners and staff members concerning the effect of regulation on managerial performance. In the hopes of furthering a healthy business climate within these industries such that they may contribute the fullest possible to our increasing social benefits, it was proposed that the following three hypotheses be tested via an attitude survey.

Hypothesis I. Utility managers and commission personnel (as groups) have the opinion that regulation currently assures only average performance and to a degree penalizes efficient management.

Hypothesis II. Utility managers and commission personnel (as groups) have the opinion that it is possible to obtain a measure of managerial performance.

Hypothesis III. Utility managers and commission personnel (as groups) have the opinion that research is needed on a method or methods for motivation of management.

Two hypotheses of secondary importance were also to be considered in this attitude study.

Hypothesis IV. Telephone managers, as a group, have opinions which differ from those held by gas and electric utility managers. These opinions express a more positive agreement with Hypotheses I, II, and III.

Hypothesis V. Utility managers consider exceptional performance in areas related to personnel supervision as indicative of exceptional managerial performance.

In addition to the above hypotheses, information regarding the attitudes and opinions of utility managers and commission personnel on the following questions was desired.

Question 1. What action by regulatory bodies would motivate exceptional managerial performance?

Question 2. What effect should regulation have on managerial performance?

Question 3. What criteria are considered an index of exceptional managerial performance?

An alternative to investor-owned telephone, gas, and electric utilities is outright public ownership of these industries. In the United States, however, private ownership has been the more common form of business organization with a state regulatory body providing the necessary public control (20, p. 3).

The object of this study was to clarify the effect which state regulation has had and/or should have on the incentive for exceptional managerial performance within investor-owned telephone, gas, and electric utilities. The influence and effect of regulatory action, if any, upon public and consumer-owned utilities was not considered as a part of this study.

It is hoped that this study will aid in the improvement of the regulatory process such that private utility industries, while making an excellent contribution to the growth and prosperity of our nation in the past, may contribute even more fully in the future.

REVIEW OF LITERATURE

This review of literature was undertaken to provide an understanding and appreciation of the opinions expressed on the following topics by economists, utility managers, commissioners and others interested in regulation.

1. The effect of regulation on managerial performance.
2. The effect which regulation should have on managerial performance.
3. The need for research in the area of regulation and its influence on managerial performance.
4. The possibility of measuring managerial performance.

Effect of Regulation on Managerial Performance

With few exceptions, writers have expressed the opinion that regulation of private business tends to remove management's incentive for efficiency and inovation. It is interesting to note that there seems to have been little, if any, change in this opinion since the early 1900's. In 1910 Croly (30, p. 369), a leading political thinker of his day, voiced his criticism of the type of regulation provided by the New York Public Service Commission which "deprived" an individual of incentive. In 1911, Prof. Taussig (114, p. 416) recognized that direct control of profits and prices by the regulatory body tended to remove "the stimulus to efficiency and progress". Chutter (26, p. 329), an electric utility specialist with Massachusetts Investors Trust, said in 1963:

> If all the benefits from good management are siphoned off for the benefit of the rate payer, the stimulating reward for superior management will be missing.

Whitten (136, p. 710) in 1913 wrote that restricting a company's return to a fixed rate would ". . . tend to discourage enterprise and economy in management."

In 1923, Morgan (78, p. 110) wrote:

> By taking the utility business off a speculative basis and by assuring the receiving of a return regardless of the amount of effort put forth by the managements, a condition is created in which it is humanly impossible not to expect some tendency to slacken one's efforts and to let the public bear the burden of diminished efficiency.

Nash (81, p. 110) wrote in 1925 that,

> In time it must become obvious to utility managers that, under prevailing regulatory methods, there is no definite incentive for continued adoption of new devices which will save labor or other operating costs when the result of the savings are . . . passed along to patrons through rate reductions.

Trachsel (120, p. 334) indicated in 1947 that:

> . . . as regulation becomes more effective, there is danger that utility management may show less initiative in introducing new economies and more efficient methods of administration.

Bain (7, pp. 595 and 599) wrote in 1959:

> Existing public utility regulation is subject to a number of serious deficiencies as a means for securing the best in market performance from regulated industries, . . .

One of these deficiencies is ". . . the fact that it seriously reduces private-enterprise incentives for efficiency in general."

In 1963 Trebing (121, p. 22) wrote:

> Perhaps the most serious accusation to be leveled against the commission system in recent years is the charge that regulation stifles incentives for inovation and greater efficiency.

Finally, in 1963, Prof. Morton (79, p. 371) stated:

> If there is no hope of profit or if every act that raises profit is offset by a regulatory act that reduces it, the normal incentives which motivate business operation are impaired.

Between 1910 and 1964 many others expressed this same opinion, that regulation removed the incentive for exceptional and efficient managerial performance (138, p. 551; 108; 131, p. 21; 90; 98, p. 224; 81, pp. 110 and 234; 68, p. 122).

Bauer (11, p. 330) and Nash (82, p. 290) acknowledged the theory behind these opinions but their observations of managerial performance in actual practice did not substantiate these conclusions. Other writers also failed to agree that management incentives were stifled by regulation (1, p. 39; 43, p. 129; 13, p. 414). Bauer (11, p. 348) did recognize however that the problem of efficiency in public utilities was exceedingly important.

This indicates that the regulatory process has often been criticized for negating in regulated industries the incentive for efficiency and inovation, which theoretically is automatically insured under competitive conditions (122, p. 122). Massel (75, p. 26), however, reports in a study of competition and monopoly, that

> . . . there is no organized body of field analysis to establish that, on the whole, efficiency is increased under competitive conditions. Nor is there clear evidence that monopolistic elements increase profits significantly.

Even so, economic theory still presents the precept that pure competition leads to efficient allocation of goods and services and monopoly to exploitation and excess profits (69, 8).

Outside factors influencing efficiency

Trebing (121) identifies and discusses a number of factors outside the regulatory process which influence efficient managerial performance.

Technological advances affecting equipment efficiencies coupled with the phenomenal growth of the electric, gas and telephone industries since 1900 have resulted in significant increases in physical productivity for each of the industries.

Although these industries are considered monopolistic, there is a certain degree of competition with other industries and within each industry.

Inflation often creates the need for improved managerial performance and increased efficiencies in order to maintain a particular profit level, let alone increase profits.

Finally, there is a certain amount of professional pride which motivates a manager to perform as best he knows how regardless of the regulatory effect.

Trebing indicates that these factors influence management to perform in an efficient and exceptional manner, but referring to regulation he writes that:

> The force dampening incentives is almost entirely a function of regulatory technique, while the countervailing force for efficiency is largely a product of factors operating outside or independent of the ambit of regulation. (121, p. 27)

This justifies, he feels, a consideration of how the regulatory process might provide increased incentive and motivation to management.

What Effect Should Regulation Have on Managerial Performance?

While there is some degree of agreement about the theoretical effect of regulation upon managerial performance, the suggested methods for correcting the situation are quite diverse. Some authors merely express the opinion that good management of an enterprise should be encouraged and rewarded (45, p. 150; 74; 50; 72; 34; 131; 93; 79; 2; 111; 16; 104).

Motivating managerial performance

The many methods which have been suggested for motivating public utility management can be conveniently grouped according to the manner in which the incentive is provided.

1. Through the rate of return.
2. Through a non-pecuniary factor.
3. Through the rate base.
4. Through increased regulatory control.

Rate of return Phillips (93) expressed the opinion that too little had been done in determining what should be considered in the fair rate of return. Other authors, in discussing the rate of return, failed to mention efficiency of management as an influential factor (53, p. 351-352; 113; 63; 42, p. 385; 52; 17). Often though, the rate of return was the median by which an incentive was provided to management.

Raymond (99, p. 113) and Untereiner (126, p. 353) expressed the opinion that only the rates charged to the consumer should be regulated. Once rates have been set which allow for reasonable costs and allow a fair profit, then the enterprise (the utility) should be allowed to earn as much more as it

can above this fair profit provided it does so honestly and fairly.

Raymond, in 1918, (99, p. 113) suggested that:

> . . . the fair return to a public utility corporation is any return it is able to earn by fair and honorable dealing so long as it is not more than successful men in other business of equal risk and magnitude earn on honestly and reasonably invested capital.

And, in 1963, Untereiner (126, p. 353) said that the utility should be allowed to

> . . . make the best profit it can at the rates prescribed for it. Let it make 12% or 20% if it's good enough; and let it go bankrupt if it's bad enough.

Prendergast (96, p. 190) and Nash (82, p. 291) expressed similar opinions.

These are considered extreme suggestions, for it generally is conceded by academic and political students that the earnings of a utility enterprise should be controlled to some degree (82, pp. 291-292; 79). The consumer would express dissatisfaction if a utility were allowed to earn a very high rate of return even though the customers' service and rates were reasonable and fair (61, p. 263).

The regulatory process generally regulates rates and profits, through the allowance of a fair rate of return. The popular suggestion therefore is for the commission in a rate increase hearing, to permit an increase in the utility's allowed rate of return provided management can demonstrate exceptional or efficient performance. As an example, if the rate of return normally allowed a utility with average managerial performance was 6%, the commission might allow an efficiently managed utility a return of 7% on their invested capital. This method for providing

incentive to management has been suggested by many of the writers (41, pp. 432-433; 96, p. 183; 95, p. 1038; 45, p. 150; 81, p. 110; 136, p. 1877; 14, p. 14; 21, p. 222; 104; 115, p. 351; 120, p. 334).

A negative approach is also suggested (120, p. 334; 103; 21, p. 222; 9, p. 532). This approach is simply that of penalizing poor managerial performance by reducing the utility's allowed rate of return on the invested capital or by refusing to allow the utility a rate increase when management practices are considered to be below average and inefficient. According to these suggestions, management should be required to correct its inefficient practices before the regulatory body would consider a rate increase for the utility.

Petteway (92) feels that the rate of return should be a "zone of reasonableness" which is really a combination of the positive and negative approaches given above. In this respect it is suggested that management can be motivated by allowing the efficient utilities to earn a return in the upper portion of the zone without the regulatory body initiating a rate hearing. Likewise, the inefficiently managed utilities would be relegated to the lower range of the zone until they improved their performance. Others offer similar suggestions (139, p. 170; 21, p. 222; 110; 133; 79).

In a similar vein are suggestions regarding profit sharing between utilities and consumers. Jones et al. (59, p. 268) presents an arrangement where the increased return over and above the fair rate of return, or the allowed rate of return, which is due to managerial efficiency, is shared by the company and the consumer on a 50-50 basis. Thus, if a utility were

allowed to earn a return of 6% and they were to actually earn 7% due to exceptional managerial performance and efficiencies, then the company would be allowed to keep 1/2% and would return to the consumer 1/2% either as a refund or a rate reduction in the following year. Similar profits sharing suggestions have been made by others (136, p. 710; 45; 138, p. 587; 108, p. 33; 23, p. 192).

Bussing (22) reported in 1936 on a study of the so-called sliding scale plans. Sliding scale plans were originally conceived as a means of providing an automatic adjustment to the allowed rate of return as a utility demonstrated its increased efficiency. They were based upon the premise that a reduction in rates by a utility was indicative of increased efficiency and entitled the utility to an increased rate of return. These plans were intended to motivate efficient managerial performance and were popular between 1900 and about 1930. Early writers felt these plans had great potential (98, p. 224; 78; 68, p. 122; 96, p. 191), but on the whole they have not lived up to their expectations (128, 33, 50).

Barnes (9) and Smith (107, p. 71) felt that management needed to prove it was efficient before the utility received a fair rate of return. No increase in the utility's rate of return for efficient managerial performance was appropriate. Barnes (9, p. 532) justified this position by his interpretation of the Supreme Court's decision in the Bluefield case. He believed that the Court made

> . . . "efficient and economical management" a prerequisite to the utility's claim to either a nonconfiscatory or a reasonable rate of return.

Knapp (60, p. 748) interpreted the actions of regulatory bodies as

appearing ". . . to view efficient and economical management as an implied prerequisite for the obtaining of a fair rate of return upon application by a utility." Providing management with an incentive by allowing the utility a differential rate of return, while the most popular suggestion, was at times criticised because the rate of return was a reward to the stockholders and not to management or the workers (11, p. 532; 78; 9, p. 532).

Because of this, many have indicated that the only proper motivation for management should be adequate wages and salaries, and possibly a sharing of profits based on the individual manager's contribution (13, p. 416; 115, pp. 49-51; 11, pp. 343-344; 78, p. 315; 120, p. 334; 116, p. 351; 107, p. 70). A study by American Telephone and Telegraph Co. (2, p. 70) however found that, "In all of regulated industry, no company was found with a formal system of rewards and penalties for its people based on their profit performance."

Non-pecuniary factors Morgan (78, pp. 133-138) in 1923 wrote of non-pecuniary incentives. These were emulation or personal competition with other managers; a desire to serve the community and state; a professional pride in advancing the art of management regardless of reward; and a desire for personal satisfaction based on recognition by ones contemporaries and associates. Bauer (11, p. 339) also expressed the opinion that

> . . . one of the chief forces promoting efficiency would be a systematic appeal to the public spirit and professional pride not only of the operating officials but also department heads and all employees.

Bernstein (15, p. 219) also reports that all incentives, including

psychological and emotional incentives, have not been used extensively and that regulatory agencies have taken little interest in developing their potential.

Rate base The rate base has generally been regarded as inappropriate for use in providing an incentive to management (13, p. 417; 23, p. 192; 116, p. 351; 12).

Smith (107) however presents an interesting argument for its use and Morgan (79) recognized its possibilities in 1923 (79, pp. 278-283). Smith (107, pp. 71-74) recognized that during the rate hearing the commission considers the expenses and investments which a utility has made in the past. He suggests that the commission should disallow all expenses and investments which are excessive or imprudent and considered in excess of that expected of an efficient and well managed utility. This would be the penalty for inefficient management. A penalty, Smith feels, which would be more direct and specific than would be a reduction in the rate of return.

Increased commission control Increased commission control might be considered a negative approach to incentive. Those who are of the opinion that the commission needs more control feel that only through increased and extensive commission control can management be motivated toward desirable performance. Bain (7, p. 630) strongly urges this position saying:

> . . . commissions charged with the regulation of existing utilities should in general be given more power, so that instead of in large part simply limiting (or supporting)

> rates to cover average costs, they could in addition (under adequate legislative standards) control or establish the scale of operations, rate of output, and investments or regulated firms, to the end of securing socially optimal price-output adjustments. Only by thus increasing the regulatory powers of commissions does it seem possible to compensate for the loss of private management incentives for efficiency, bold expansion, and so forth which results from the rigid control of rates and profits.

The need for increased commission control over managerial performance has also been suggested by others (11, pp. 331-335; 12, p. 237; 13, pp. 413 and 418).

Court rulings on regulation and managerial performance

The rulings of the courts reflect the court's opinions and also influence the attitudes of others. Two cases which date back to 1923 still remain significant today because of their reference to managerial efficiency.

State of Missouri vs. Southwestern Bell Telephone Company The first case involved the state of Missouri and the Southwestern Bell Telephone Company. Justice Brandeis (110, p. 291), in his dissenting opinion made this statement:

> The compensation which the constitution guarantees an opportunity to earn is the reasonable cost of conducting the business. Cost includes not only operating expenses but also capital charges. Capital charges cover the allowance, by way of interest, for the use of the capital, whatever the nature of the security issued therefor; the allowance for risk incurred; and enough more to attract capital. The reasonable rate to be prescribed by a commission may allow an efficiently managed utility much more. But a rate is constitutionally compensatory, if it allows to the utility the opportunity to earn the cost of the service as thus defined. (underline added)

Bluefield Water Works case The next month, June, 1923, the court ruled in the Bluefield Water Works case (18). This case, like the previous one, was concerned with the setting of the rate base but the decision made reference to the rate of return.

> The company contends that the rate of return is too low and confiscatory. What annual rate will constitute just compensation depends upon many circumstances and must be determined by the exercise of a fair and enlightened judgment, having regard to all relevant facts. A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties; but it has no constitutional right to profits such as are realized or anticipated in highly profitable enterprises or speculative ventures. The return should be reasonably sufficient to assure confidence in the financial soundness of the utility and should be adequate, under efficient and economical management, to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties. A rate of return may be reasonable at one time and become too high or too low by changes affecting opportunities for investment, the money market and business conditions generally. (18, pp. 693-692) (underline added)

This ruling has been interpreted by some to mean that the utility must be efficient and economically managed before it receives the fair rate of return, and by others to mean that a utility which is "under efficient and economical management" should receive a higher rate of return. Certainly it does imply that the efficient and economical managed utility should receive a higher rate of return than a utility which is not so managed, but it does not give a guide as to what that rate of return should be quantitatively.

Hope Natural Gas case The courts decision in the Hope Natural Gas case (35) does not negate these decisions, but, in fact, seems to

substantiate them.

> From the investor or company point of view it is important that there be enough revenue not only for operating expenses but also for the capital costs of the business. These include service on the debt and dividends on the stock.
>
> By that standard the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital.

The court refers to the Southwestern Bell case noted earlier and the quotation given and then states, "The conditions under which more or less might be allowed are not important here." (35, p. 603)

In the Hope case, the court limits its jurisdiction by stating:

> It is not theory but the impact of the rate order which counts. If the total effect of the rate order cannot be said to be unjust and unreasonable, judicial inquiry under the Act is at an end. The fact that the method employed to reach that result may contain infirmities is not then important. (35, p. 602)

Commission attitudes

The decisions of the commissions have been reviewed periodically so as to understand their attitudes on the question of rewarding managerial efficiency. After such a review in 1926, Spurr (109, pp. 103-104) concluded that most commissions felt they should reward a utility if the utility were efficiently managed. He was unable to determine, however, "how much" of a reward should be given.

> While there are many general statements of the policy of the commissions in respect to efficient management, not much is to be found in the cases to indicate to what extent the commissions have gone or will go to reward such management. It is certain that more has been allowed where the

> management has been efficient than in cases where it has been inefficient, but how much more has been allowed for high efficiency than for reasonable efficiency is hard to make out.

Knapp (60, p. 748) reported that the courts have also failed to specify any portion of the rate of return as a reward due to efficient management.

Cabot, in 1927 (23, p. 192), reviewed an Illinois public Utilities Commission decision which said in part:

> A utility which is excellently managed, progressive in development, alive to the public requirements, aggressive in securing new business, economical in operations, courteous to consumers, and fundamentally honest in all transactions, should receive greater consideration in the fixing of a fair rate of return than should a utility of which the reverse is true.

Nash (81, p. 237) came to the same conclusion after a similar review of commission decisions saying, "It appears . . . that the commissions are of the opinion that efficiency and progressiveness should be rewarded by a higher rate of return."

A decision by the Idaho Commission in 1916 was considered a typical commission policy by Bernstein (14, p. 14). This decision recognized ". . . the efficiency in operation and economy in management" in determining the rate of return. He concluded that the courts and commissions, when considering the appropriate rate of return, took into account the interest rate, the risk, and the efficiency and economy of management.

Glaeser in 1927 (41, pp. 432-433) was not in agreement with this opinion, saying:

> While commissions have given lip service to the principle that efficiency should be rewarded, they have in practice failed measurably to recognize it. There seems to be a good deal of truth in the charge sometimes made that regulation has a

tendency to treat all management as of the same level of efficiency.

Oxenfelds (90) said in 1962 that almost no public utility commission provided a strong financial incentive to spur inovation.

And, in 1956, Public Utilities Fortnightly reported on a review of commission decisions which related to managerial efficiency and the rate of return. They reported that in addition to "giving verbal encouragement to efficiency, the commissions have repeatedly asserted a policy of rewarding exceptional managerial ability by allowing a higher than ordinary rate of return (70, p. 561).

Review of commission decisions 1954-1963 Commission decisions reported in Public Utilities Reports for the years 1954 through 1963 were reviewed for references to managerial efficiency. For these 10 years there were only 19 references covering 17 commission decisions. Three of the decisions did not apply to this study. Eight of the decisions dealt with utilities considered inefficient by the commission and as a result of this inefficiency the utility was granted either a lower rate of return than requested or the rate increase was withheld (37, 24, 84, 54, 89, 87, 88, 86). Two decisions indicated that the quality of management should be considered by the commission but gave no guide as to the degree of influence it should have (85, 66). Two decisions indicated that managerial efficiency was a prerequisite for a fair rate of return (32, 67). One decision granted an 0.2% increase in the allowed rate of return because of efficient management (83).

The last decision, handed down by the Florida Railroad and Public

Utility Commission in 1962, is particularly noteworthy to this study. Quoting from this decision, the commission said (38, p. 255):

> In discussing the rate of return, it might be well first to observe that neither the statutes of this state nor the orders of this commission guarantee any utility that it will earn a specific return. The law and our orders contemplate nothing more than that a public utility shall have an opportunity to earn a fair and reasonable return.

The decision then noted the fact that the utility before the commission had earned less than the rate previously allowed. Their comment regarding this was as follows:

> Of course, many things can combine to bring about such a result. Inefficient operations sometimes penalize the guilty utility and this matter of efficiency compared with inefficiency in the operations of a public utility has given rise to considerable controversy in regulatory circles as to the impact of efficiency, or the lack of it, should have in fixing the allowable return. It does not appear to be reasonable to penalize a public utility's customers or subscribers for the inefficiencies of the utility. It would seem more reasonable that a public utility should be allowed something more in the rate of return if it has demonstrated its ability to operate efficiently. While it is difficult to accurately evaluate this factor because of its imponderable nature, it would appear reasonable to conclude that a public utility is operating efficiently if it has a minimum of service complaints, is continually improving its service, but is still able to produce higher earnings on lower rates than comparable or similar utilities in the general area.

This review indicated that commissions, in the past few years, have not often noted in their decisions that efficient management has affected their decision, if in fact it has. In a few cases inefficiency has resulted in the commission allowing a reduced rate of return or in refusing to grant a rate increase, but actually, little evidence is found to indicate whether commissions have or have not given recognition to efficient managerial performance during a rate hearing.

Need for Research

Commissions face two problems if they are to consider the rewarding of utilities for efficient and exceptional management. First, the difficulty of measuring managerial performance quantitatively or qualitatively, and second, the difficulty of determining or selecting a method for recognizing exceptional management performance or for penalizing inefficient management.

Bonbright recognized the difficulty in rewarding efficient management (12, p. 264) stating:

> It lies in the absence, at the present state of public utility regulation, of adequate objective tests of relative efficiency in the performance of public services.

Petteway, in discussing Florida's regulatory climate felt that managerial efficiency should be recognized and rewarded in some affirmative manner by the regulatory body. He realized though that ". . . one of the problems is in measuring the efficiency. Another problem involves the means by which the utility can be rewarded for such efficiency." (92, p. 41)

In 1926, Spurr (109) noted that management needed to be responsible for some sort of a measure or standard.

Smith in 1932 (107, p. 194) wrote of the need for cost and service standards, recognizing that:

> Such standards are exceedingly difficult to develop, but without them rate regulation consistent with the promotion of economic efficiency in production is impossible.

Others have expressed a similar awareness of the need for adequate standards for measuring managerial performance and the difficulty in

devising such standards (96, p. 180; 120, p. 334; 138, p. 587; 9, p. 291; 13, p. 417; 59, p. 268).

Welch (131) felt that more effort could be made to measure a utility's performance.

Trebing (121, p. 31) felt that

> A system of incentive regulation should attempt to create a regulatory environment conducive to the continuous improvement in productivity. The paramount requisite of such a system is that it possess a reputable norm or standard by which to judge relative performance. Furthermore, the standard and attendant deviations should be capable of effective measurement in periods of inflation and deflation as well as in periods of price stability . . .

Bauer and Gold (13, p. 413) while not in favor of providing an incentive to management by an increased rate of return, felt that this factor needed extensive study, even though its ultimate significance was conjectural.

Possibility of Measuring Managerial Performance

Wilson et al. (139, p. 170) review the report by the Commission on Revision of Public Service Commission Laws of the State of New York which offered five criteria to consider in evaluating management.

1. The lowness of the rates
2. The continuity of the service
3. The security of the service
4. The excellence of public relations
5. The qualifications and training of the employees, and reasonableness of the wages of the employees.

Appropriately they recognized the need for much further research and

study in this area before an effective plan would be devised to divide the benefits of efficiency between the stockholder, consumer and management.

The Florida Commission in a decision referred to earlier, (p.), indicated that a

> . . . public utility is operating efficiently if it has a minimum of service complaints, is continuously improving its service, but is still able to produce higher earnings on lower rates than comparable or similar utilities in the general area. (38, p. 255)

Petteway (92, p. 42), referred to this decision saying it

> . . . is the only decision by a regulatory agency, so far as we have been able to ascertain, where any attempt has been made to establish any kind of guide lines for measuring efficiency in public utility management.

Others have tried to devise a standard or yardstick which would provide more of an objective measure of managerial performance. Iulo (55, 56) reports of research for the purpose of determining the relationship between quantitative cost information and managerial efficiency. This study used Federal Power Commission statistics and segregated seven factors which were found to affect unit costs significantly. The relative importance of each factor was then determined and used to estimate expected unit costs of actual operation. These expected costs then became the standard against which actual operation costs were compared. Those companies which had unit costs higher than the estimate were considered inefficient, while those utilities whose unit costs were lower than the standard were considered efficient.

Trebing (121, p. 32) is currently doing research on a method for measuring a utility's relative performance by

> estimating a given utility's real productivity directly and comparing the result with a standard or norm that represents the real resource expenditure required to produce the utility service under conditions of average managerial prudence and competence.

Guercken (46) has also used Federal Power Commission statistics to compute an "operational performance index" which he uses as an indicator of managerial efficiency. He used generating costs, production and transmission costs, distribution expenses, and customer accounting expenses in computing this index.

While an objective measure would be most desirable, Adams and Gray (1, p. 39) quote Judge Wyzanski who states that there cannot be an "objective measuring rod" of managerial performance in public utilities but of necessity the measure must be highly subjective or largely theoretical. Koontz and Gable agree (61, p. 263).

Management and commissions have developed informal standards of managerial performance, and while these standards are appreciably high, they apparently are not unduly demanding (70).

The American Institute of Management has developed a "Management Audit" (71, 73). This "Audit" is purported to evaluate the excellence of management based upon the appraisal and rating of a management in ten categories. The categories are economic function, corporate structure, health of earnings, service to stockowners, research and development, directorate analysis, fiscal policies, production efficiency, sales vigor, and executive evaluation (73, p. 4). A similar approach was suggested and discussed by Rose in The Management Audit (102).

Morgan (79) and Whitten (133, p. 227) earlier had reported on merit

rating plans for evaluating management. Whitten notes:

> The merit rating method is one under which a commission will periodically rate the companies on a basis of comparative efficiency in serving the public and allow them to earn dividends varying with such efficiency. The aim will be to offer to capital and management a premium for such economy and efficiency as inures to the benefit of the consumer in better service or lower rates of charge.

Such a rating was suggested every five years, and then the allowed dividends determined according to the rating received.

Recapitulation

This review of the literature pertaining to regulation and managerial efficiency has indicated the following:

First: Many authors, including economists and academicians, have expressed the opinion that regulation tends to reduce management's incentive for exceptional performance.

Second: Many authors have expressed the opinion that regulation should provide an incentive to management. The most popular suggestion is to provide an increased rate of return to those enterprises (utilities) which are efficiently managed. A reduced rate of return is often suggested as a penalty for inefficient management.

Third: While the courts and commissions have verbally subscribed to the theory that a utility should be rewarded for efficient management, there is little evidence from the past ten years to indicate that they are actually doing this.

Fourth: Economists and academicians have expressed the opinion that research is needed on standards for measuring managerial efficiency.

Research is also needed into different methods for rewarding such efficiency. The attitudes and opinions of the commissioners and their staff, as well as utility managers, is not definitely known.

Fifth: Recent research on methods for measuring managerial performance indicates the opinion that such a measure can be obtained. At the present time no indication of the reliability of these measures is given. Information is lacking about the attitudes of commissioners and utility managers on the possibility of measuring managerial performance.

METHOD OF APPROACH

The purpose of this study was to test the hypotheses offered in the introduction. They were:

Hypothesis I — Utility managers and commission personnel (as groups) hold the opinion that regulation currently assures only average performance and to a degree penalizes efficient management.

Hypothesis II — Utility managers and commission personnel (as groups) hold the opinion that it is possible to obtain a measure of managerial performance.

Hypothesis III — Utility managers and commission personnel (as groups) hold the opinion that research is needed on a method or methods for motivating management.

Research Tool

The "attitude questionnaire" was selected as the research tool for use in this study, for it could be specifically designed to appraise an individual's favorableness toward some group, social institution or social concept (117, p. 394). In this study the questionnaire was utilized as a tool for measuring opinions and attitudes of regulators and utility managers which pertained to the hypotheses.

Thurstone (118, p. 607) considers "attitude" to

> . . . denote the sum-total of a man's inclinations and feelings, prejudice or bias, pre-conceived notions, ideas, fears, threats, and convictions about any specific topic.

The verbal expression of an attitude is considered to be an opinion.

The typical attitude questionnaire consists of a group of statements,

each representing an opinion about a specific topic, or attitude variable, and is used to measure a subject's attitude as expressed by his acceptance or rejection of each statement in the questionnaire (117, p. 395). The "attitude variable" refers to the range of attitudes which may be held by many different individuals about a specific topic. The attitude variable can be thought of as a continuum with a base line which represents the positions of the different attitudes. In specifying the attitude variable, it was necessary that it be stated so one could speak of it in terms of favorableness or unfavorableness, or in terms of agreement or disagreement. This attitude study was concerned with allocating the responding individuals along the attitude continuum, the base line or scale of an attitude variable, based on the statements each respondent accepted or rejected.

Interpretation of Responses

The method utilized to design the attitude questionnaire in this study was based on the previous work by Thurstone (118) and Wolins (140). It is assumed that each individual has an attitude, a standard of reference, against which he will compare each statement on the attitude questionnaire. After making this comparison he will respond to the statement according to some monotonically increasing function of his attitude about the subject matter expressed by the statement. Psychological theories agree that a stimulus generates within a person a discriminal dispersion. That is, if we were to present the same statement to the same person for a number of times, the person's perception of the statement would be different from time to time. The variance of the resulting frequency distribution might

be relatively homogenous from statement to statement. The desirable response would be for a person to reply according to his judgement of the distance between the stimulus, the statement, and his standard.

If each person did this, and the variance of their discriminal dispersions were equal, then linearity would occur. Apparently people do not do this, but instead their judgements appear to be proportional to the area under that portion of the discriminal density distribution which lies above each person's standard. That is, referring to Figure 1, if a person were asked to judge A, the distance between his standard and the way in which he perceived the statement, he apparently responds with a number which is proportional to the shaded area of his discriminal dispersion.

In this survey the individual was asked to judge directly what he seemed to be judging anyway. Each participant was therefore asked to respond to each statement on the attitude questionnaire according to how certain he was that the statement exceeded his standard. The response given was then considered proportional to the area under that individual's hypothetical discriminal dispersion.

Selection of Attitude Variable

In designing the attitude questionnaire, the first step was to select the attitude variables. The following attitude variables were judged by this investigator to be important for testing the hypotheses offered.

Attitude Variable I : To what degree does regulation currently influence managerial performance?

This attitude variable represents attitudes which pertain to the first hypothesis. Statements representing opinions within this attitude variable

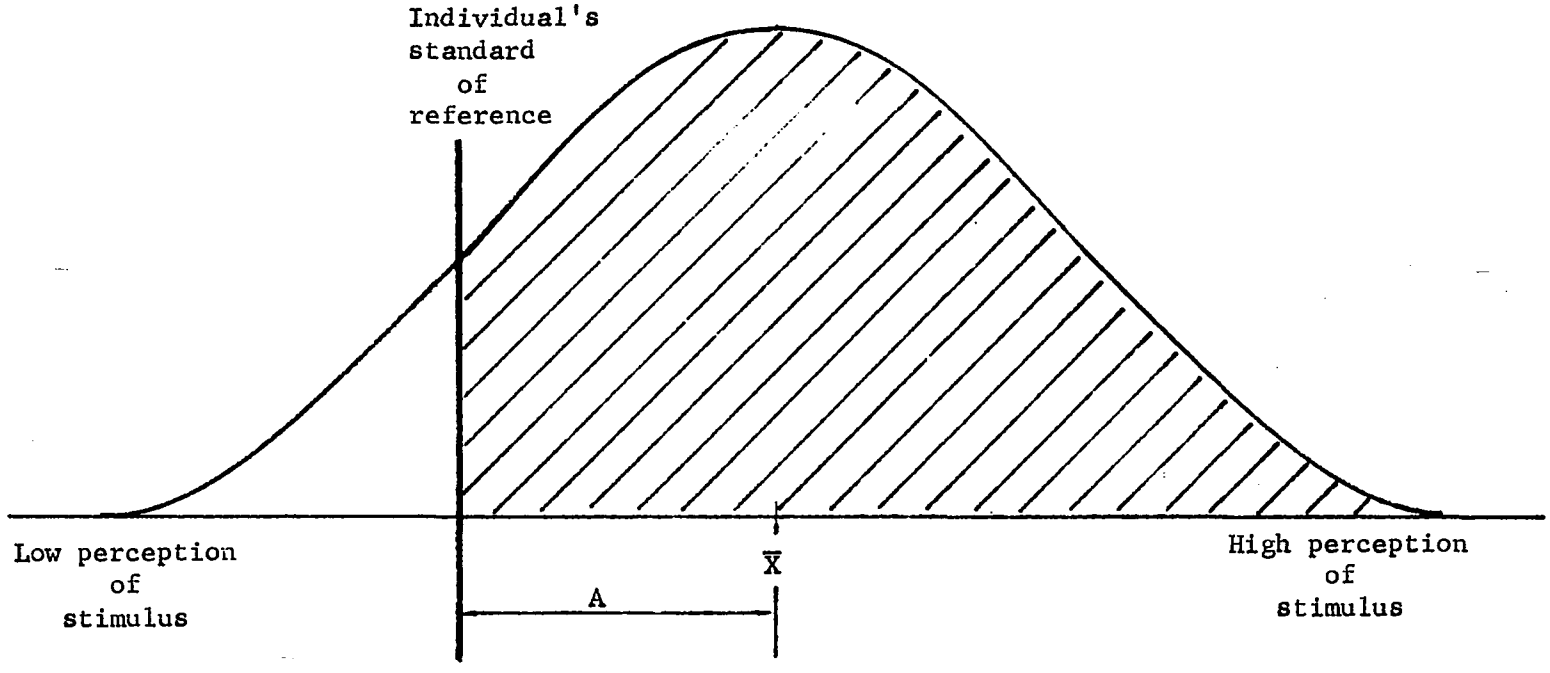


Figure 1. Hypothetical discriminal dispersion distribution generated by a stimulus

will vary from the highly favorable one, which states that current regulation motivates efficient management and provides a positive influence upon managerial performance, to the highly unfavorable one, which states that current regulation retards or stifles managerial performance.

Attitude Variable II: To what degree is it possible to measure managerial performance?

This variable represents attitudes which pertain to the second hypothesis. Statements representing opinions within this attitude variable will vary from the highly favorable one, which states that it is positively possible to measure managerial performance, to the highly unfavorable one, which states that it is impossible to measure managerial performance.

Attitude Variable III: To what degree is research and investigation needed on a method or methods for providing incentive to utilities through regulation?

This variable represents attitudes which pertain to the third hypothesis. Statements representing opinions within this attitude variable will vary from the highly favorable one, which states that research is needed at once, to the highly unfavorable one, which states research is definitely not necessary.

Attitude continuum

Each of the attitude variables can be represented by an attitude continuum, a base line or scale, with the highly favorable attitude at the one extreme and the unfavorable attitude at the opposite extreme. Attitudes representing varying degrees of favorableness or unfavorableness fall in between with the middle area representing an area of no opinion. An attitude held by any individual will fall someplace along this con-

tinuum. It, therefore, becomes necessary in designing the attitude questionnaire to identify the approximate position of each statement, and the opinion it represents, along the attitude continuum.

Selection of Statements

The statements used in the attitude questionnaire are a written expression of an opinion, a verbal expression of an attitude. The statements used in the attitude questionnaire had to be relevent to the attitude variable, unambiguous, and represent different positions, different opinions, along the attitude continuum. These opinions needed to vary from favorable to unfavorable. A large number of statements were selected as representative of the different attitudes which might be held about attitude variable I. Likewise a group of statements was selected for each of the attitude variables II and III.

Pre-testing of statements

These statements had to be tested to eliminate ambiguous statements and to identify each statement's approximate location along the attitude continuum.

This was accomplished by submitting the three sets of statements, one for each attitude variable, to a test group of judges with directions similar to those given below for attitude variable I.

Directions:

Following these directions are statements about the possibility of measuring managerial performance. We are interested in your judgment concerning how favorable an attitude is expressed by each statement. A good way to keep these directions in mind is to imagine you overheard a

stranger making each of these statements. Then on the basis of the statement the stranger made you are to indicate how certain you are that the stranger has a favorable attitude toward current regulatory practice and its effect upon managerial performance. If you can be sure the stranger does not have a favorable attitude by the statement he made, indicate this by marking "1" next to the statement. This response, "1", indicates the chances are 1 in one hundred that the stranger has a favorable attitude toward current regulatory practice and its effect upon managerial performance. If you can be sure the stranger does have a favorable attitude by the statement he made, indicate this by marking "99" next to the statement. This response, "99", indicates the chances are 99 in one hundred that that stranger has a favorable attitude toward current regulatory practice and its effect upon managerial performance. Use numbers between 1 and 99 to indicate intermediate degrees of certainty and if you feel the statement provides no information about the attitude of the stranger, indicate this by marking "50" next to the statement.

Test group

A test group of 28 judges was presented the three sets of statements. There were 39 statements under attitude variable I, 13 statements under attitude variable II, and 12 statements under attitude variable III. The initial list of statements presented to the test group is given in Appendix A with its introductory letter.

Note that these judges were directed to respond according to their certainty that the statement given represented a favorable attitude on the part of a stranger and were not to respond according to their own agreement or disagreement with the statement.

Analysis of replies

The replies received by this initial group of judges were then analyzed by means of a correlation matrix to determine the intercorrelation among the judges. A low correlation for any judge when compared with the other judges indicated that this judge was definitely out of line with the majority, due either to a misinterpretation of the directions or to some

other reason. The replies of three judges who did not correlate highly with the other judges were eliminated before continuing the analysis of the replies.

The responses of the remaining 25 judges were then used to compute, statement by statement, the mean response and the standard deviation. This information was then used to select those statements which would be used on the attitude questionnaire.

Selection of statements to be used

The mean response locates the approximate position of an opinion, represented by a statement, along the attitude continuum. Statements were selected to represent different attitudes ranging from favorable to unfavorable. This was completed for each attitude variable.

The standard deviation provided a measure of the ambiguity of the statement. A large standard deviation indicated an ambiguous statement. Statements were selected which had a relatively low standard deviation indicating statements which were relatively unambiguous.

There were seven statements selected as representative of a range of opinions about attitude variable I, seven statements were selected for attitude variable II, and five statements for attitude variable III.

Attitude Questionnaire

These statements were included in the attitude questionnaire preceded by directions similar to those given below for attitude variable I.

Directions:

Following these directions are a group of statements about current regulatory practice and its effect upon managerial performance. We are interested in your feelings or attitude about each statement. Some of these statements you will probably agree with. That is, some statements will express your own attitudes or feelings about current regulatory practice and its effect upon managerial performance. Other statements will express attitudes or feelings opposite to yours. Still other statements you will be uncertain to some degree about how well it describes your feelings or attitudes.

For each statement indicate how well it describes your attitude by a number from 1 to 99. If you are certain the statement describes your attitude write "99" in the space provided after the statement. If you are certain the statement describes an attitude opposite to yours write "1" in the space provided. If you are very uncertain or cannot decide if the statement describes your attitude write "50" in the space provided. Use numbers between 50 and 90 to indicate various degrees of agreement with a statement. Use numbers between 1 and 50 to indicate various degrees of disagreement with each statement. You may wish to refer to the following scale in order to keep these directions in mind.

A reproduction of the scale which followed these directions is shown in Figure 2.

Additional information desired

While the purpose of this study was primarily to test specific hypotheses, it was also considered important to gather information which would provide insight into the answers of three questions considered in the introduction. It was believed that the answers to these three questions would also provide additional information relevant to the basic hypotheses. The questions were:

Question 1: What action by regulatory bodies would motivate exceptional managerial performance?

Question 2: What effect should regulation have on managerial performance?

Question 3: What performance is an index of exceptional managerial performance?

These questions have reference to hypothetical actions rather than

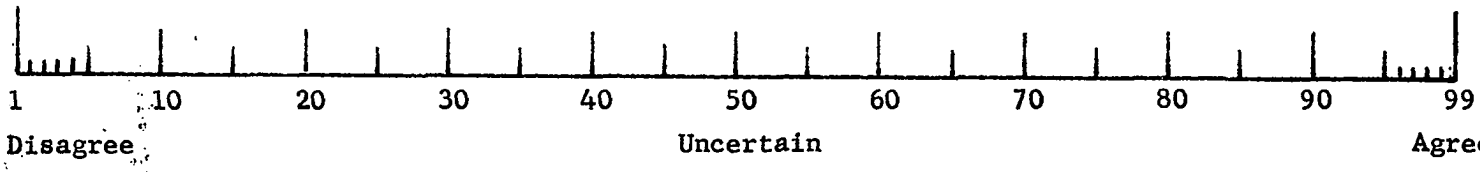


Figure 2. Scale used on attitude survey questionnaire

factual situations. Statements representing opinions about these questions tend to be ambiguous and defy placement along an attitude continuum with any degree of accuracy.

That is, it is not possible for a person to express a valid opinion about a hypothetical situation. Since attitudes, by definition, have a strong emotional basis (118), one cannot accurately anticipate emotional responses to hypothetical circumstances.

It is possible however to obtain an indication of agreement or disagreement with a statement. While the method of analyzing the responses to statements relative to these questions will differ from the method used to analyze the responses to attitude variables I, II, and III, the responses will provide useful and valuable information.

Three groups of statements were developed to represent different opinions about each question and were included in the attitude survey. For the purpose of uniformity, the statements were identified on the questionnaire as attitude variables IV, V, and VI, and referred respectively to questions 1, 2, and 3. The directions heading each group of statements were similar to the directions given for attitude variable I.

The completed attitude survey questionnaire is presented in Appendix E.

It will be noted that additional information was requested from each participant to assist in classifying and analyzing the data obtained or expected.

Mailing of Attitude Questionnaire

The decision was made to send the completed questionnaire to a group of utility managers and to a group of commissioners and commission staff members.

Letters were sent to commission chairmen on May 12 and June 4 requesting their assistance and cooperation. Each commission chairman was requested to provide the names of those individuals, commissioners and staff members, who would participate in the study by completing the full questionnaire.

In a similar manner, the utility managers were requested by letter on May 12 to participate in this study. The names of the utility managers were selected somewhat at random from the mailing list for the Engineering Valuation Conference. Some selection was attempted to assure respondents being selected from each of the states and representing the gas, electric, and telephone industries.

The letters sent to the commission chairmen and to the utility managers are presented in Appendix B and Appendix C.

Professor Wolins advised that a sample group of no less than 100 participants would provide satisfactory and usable data. In the hopes of insuring at least this number of respondents the questionnaire was sent to 441 utility managers. Each utility manager received a survey addressed to him personally. Commission chairmen responded with the individual names of 106 individuals to whom the survey was mailed personally. Five copies of the survey were mailed to those commissions who did not volunteer the names of specific individuals with the exception of Alaska, who was mailed

3 copies. This was a total of 239 copies of the attitude questionnaire sent to commissions and commission personnel.

The different introductory letters included with the attitude survey questionnaire are presented in Appendix D.

METHOD OF ANALYSIS

Completed attitude survey questionnaires were received from managers of telephone, gas and electric industries and from commissioners and commission staff personnel. Each completed questionnaire received for analysis was given an identification number.

A follow-up letter was mailed July 9 to all persons receiving an attitude survey questionnaire. After allowing for receipt of the follow-up letter by the respondent, all later responses were so noted to permit their comparison with the initial returns. Copies of the two follow-up letters used in requesting an early response to the attitude survey questionnaire are shown in Appendix F.

Identification of Utility Groups

A total of 170 survey questionnaires were returned for analysis as a part of this study. Each returned questionnaire, in addition to receiving an identification number, was identified according to the type of utility for which the respondent worked. The utility groups were identified in the following manner:

Utility group 1: Responses received from managers of utilities providing telephone service only.

Utility group 2: Responses received from managers of utilities providing gas service only.

Utility group 3: Responses received from managers of utilities providing electric service only.

Utility group 4: Responses received from managers of utilities providing combined gas and electric services only.

Utility group 7: Responses received from managers of utilities providing

combined telephone, gas, and electric services only.

Utility group 8: Responses received from commissioners of state regulatory agencies having jurisdiction over gas, electric, and telephone utilities.

Utility group 9: Responses received from staff members of state regulatory agencies having jurisdiction over gas, electric, and telephone utilities.

The distribution of the completed questionnaires by state and utility group is shown in Table 1. Due to insufficient returns from individual states, interstate comparisons and analysis was impractical. The analysis of the data obtained from the completed questionnaires was accordingly made only on a national basis.

Scoring Responses

The information on the first page of the questionnaire was coded for storage on punched cards. Each statement in the questionnaire was also renumbered in sequence according to Table 2. This was necessary for proper identification of each statement and to allow for computer analysis.

The nature of the expected response to each statement on the attitude questionnaire was discussed in detail in the previous section. Accordingly, the reply given by each respondent to each statement was assumed to be equivalent to the area under his hypothetical discriminal dispersion which lies above his standard of referency for that statement. Each reply given by a respondent was therefore scored by converting the reply into its corresponding normal standard deviation as shown in Table 3. All subsequent analysis of the data was performed upon the scored responses rather than upon the direct response given.

Table 1. Distribution of responses by regulating state commission and utility group

State commission	Utility group							
	0	1	2	3	4	7	8	9
Not given		2						
Alabama								1
Arkansas					1			
California		1	1			1		
Colorado			1		1			
Connecticut			1		1			
Delaware					1			
District of Columbia							1	
Florida		1	2				1	2
Hawaii				1		1		1
Idaho							3	
Illinois		3	3		5		1	2
Indiana		1	1	1			1	2
Iowa	1	4			5			
Kansas		1	1		1	1		
Kentucky		3			1			
Louisiana			1					1
Maine				1				2
Michigan			1		1		2	2
Minnesota		1	2					
Mississippi			1					

Table 1. (Continued)

State commission	Utility group 0	1	2	3	4	7	8	9
Missouri		1	1	1	3			1
Montana					1			
Nebraska		1	1					
New Hampshire			1					
New Jersey			2		2			5
New Mexico								1
New York					1			
North Carolina				2				
North Dakota		1						
Ohio		2	1		1			
Oklahoma			1					
Oregon		1					1	1
Pennsylvania		2	2	3			1	4
Rhode Island					1			
Texas		1		1				
Utah			1					1
Vermont							2	2
Virginia		2						3
Washington		2	1				1	3
West Virginia			1					
Wisconsin		2	2		2	1	1	2
Unclassified		8		4	2	1		
Totals	1	40	29	14	30	5	15	36

Table 2. Renumbering of statements within attitude survey questionnaire for computer analysis

Attitude group	Statements were numbered on attitude survey questionnaire	Statements renumbered
I	1 - 7	1 - 7
II	1 - 7	8 - 14
III	1 - 5	15 - 19
IV	1 - 12	20 - 31
V	1 - 9	32 - 40
VI	1 - 29	41 - 69

Table 3. Score for each response based on the normal standard deviation

Actual response (unfavorable)	Score	Actual response (favorable)	Score
01	-2.326	50	0.000
02	-2.054	55	+0.126
03	-1.881	60	+0.253
04	-1.751	65	+0.385
05	-1.645	70	+0.524
10	-1.282	75	+0.674
15	-1.036	80	+0.842
20	-0.842	85	+1.036
25	-0.674	90	+1.282
30	-0.524	95	+1.645
35	-0.385	96	+1.751
40	-0.253	97	+1.881
45	-0.126	98	+2.054
50	0.000	99	+2.326

Comparison of Returns "Before" and "After" Follow-up Letter

There was a possibility that the respondents who replied after receiving the follow-up letter held opinions which differed with those individuals who responded initially. This possibility required testing.

This analysis was performed by first grouping utility managers, utility groups 1, 2, 3, and 4, into a "before" and an "after" group. This was also done for the commission personnel, utility groups 8 and 9. Utility group 7 was not used at this time because of the small number of respondents within this utility group.

The difference in mean response to each statement by those utility managers responding initially and those utility managers responding after receiving the follow-up letter was tested statistically by using the "Student's" t-distribution. This same analysis was performed on the "before" and "after" responses by commission personnel.

Identification of Attitude Groups

After scoring the 170 questionnaires it was necessary to verify the initial grouping of statements within specific attitude groups. A correlation matrix was obtained showing the correlation of the scored responses to each statement with the scored responses to every other statement. Statements measuring the same attitude variable show a relatively high positive or negative intercorrelation, and are considered to be an attitude group. Those statements which indicated relatively high positive or negative intercorrelation were assigned to the same attitude

group and the attitude variable they purported to measure was then reconsidered.

Attitude group I

Attitude group I originally contained seven statements about current regulatory practice and its effect on managerial performance. Relatively high intercorrelation was noted between statements 1, 3, 4 and 7, and these statements were considered as a new group and identified as attitude group A. Attitude group A was recognized as a measure of attitude variable I.

Attitude group II

Attitude group II originally contained seven statements about the possibility of measuring managerial performance. Relatively high intercorrelation was noted between statements 10, 11, 13 and 14, and these statements were considered as a new group and identified as attitude group B. Attitude group B was recognized as a measure of attitude variable II.

Attitude group III

Attitude group III originally contained five statements about research on a method or methods for providing incentive to utilities through regulation. Relatively high intercorrelation was noted between statements 15, 16, 18, and 19, and these statements were considered as a new group and identified as attitude group C. Attitude group C was recognized as a measure of attitude variable III.

Attitude group IV

Attitude group IV originally contained twelve statements about regulation and the effect which it should have upon managerial performance. Relatively high correlation was found between statements 21, 22, 23, 25, 26, 28, 30 and 31, and these statements considered as a new group and identified as attitude group D. No attitude variable had been identified previously for the original attitude group because it covered hypothetical actions rather than factual situations. The nature of the statements comprising attitude group D suggests an attitude variable which expresses the degree to which regulation should go in attempting to motivate exceptional managerial performance.

Attitude group V

Attitude group V originally contained nine statements about regulatory action intended as motivation to achieve exceptional managerial performance. Relatively high intercorrelation was found between statements 32, 34, 36, 37, 38, and 39, and these statements were considered as a new group and identified as attitude group E. As in attitude group IV, no attitude variable had been identified previously for the original attitude group. The nature of the statements with high intercorrelation suggested an attitude variable regarding the importance of the rate of return as a motivator of exceptional managerial performance.

Attitude group VI

Attitude group VI originally contained twenty-nine statements about criteria which indicate exceptional management. Relatively high correla-

tion was found between statements 41, 42, 43 and 59, and these statements were considered as a new group and identified as attitude group F. Relatively high intercorrelation was also noted between statements 45, 46, 48, 49, 51, 54, 55, 58, 60, 63, 64, 65, 66, 67, and 69. These statements were considered as a new group and identified as attitude group G. An analysis of the statements in attitude group F suggested an attitude variable relative to the importance of profit as an indicator of exceptional management. Statements within attitude group G suggested an attitude variable regarding the importance of interpersonal activities as an indicator of exceptional management.

Summary of Attitude Groups

The result of this portion of the analysis was seven groups of statements, each group being identified as an attitude group and each attitude group measuring an attitude variable. The resulting attitude groups and corresponding attitude variables are summarized as follows.

Attitude group A measuring attitude variable I:

> To what degree does regulation currently influence managerial performance?

Attitude group B measuring attitude variable II:

> To what degree is it possible to measure managerial performance?

Attitude group C measuring attitude variable III:

> To what degree is research and investigation needed on a method or methods for providing incentive to utilities through regulation?

Attitude group D measuring attitude variable IV:

> To what degree should regulation attempt to motivate exceptional

managerial performance?

Attitude group E measuring attitude variable V:

To what degree is the rate of return important as a motivator of exceptional managerial performance?

Attitude group F measuring attitude variable VI:

To what degree is profit an indicator of exceptional managerial performance?

Attitude group G measuring attitude variable VII:

To what degree is the quality of a utility's interpersonal activities an indicator of exceptional management?

Analysis of Scored Responses

One individual did not identify his utility and could not be placed in an appropriate utility group. Each of the remaining 169 respondents was scored on each attitude group. An individual's attitude group score was determined by his scored responses to the statements comprising that particular attitude group. The sign was first changed on the scores for those statements which correlated negatively with the other statements within the attitude group. The individual's attitude group score was then the sum of the scores for each statement in the attitude group.

The mean and standard deviation of the scores for each statement and for each attitude group was obtained for each utility group and for specific combinations of utility groups. The difference between two mean scores for any two utility groups or combination of groups was tested statistically by using the "student's" t-distribution. When σ_1 and σ_2 are unknown and presumed unequal and the hypothesis is that u_1 and u_2 are equal, then the formula for t is given by Walker and Lev (127, p. 157) as

$$t_{.025} = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{S_1^2}{N_1} + \frac{S_2^2}{N_2}}}$$

The findings and results based on this analysis are found in the next section.

FINDINGS AND RESULTS

This section reports the findings and results obtained in analyzing the data from the attitude survey questionnaire. The method of analysis was outlined in the preceding section.

Questionnaires Returned

The attitude survey questionnaire was mailed personally to 441 utility managers across the United States. This same questionnaire was also mailed personally to 71 commissioners or commission staff members in 15 states. Eight states plus the District of Columbia indicated one individual to receive and distribute the questionnaire and this group received a total of 35 questionnaires. The balance of the states did not respond to the original letter requesting names of individuals who would participate in this study and the chairmen of these 27 states were each mailed approximately 5 questionnaires.

Completed questionnaires were received from 119 utility managers and 51 commission personnel. This represented a 27% return from utility managers and a response from 35% of the state commissions.

Utility managers returned 9 completed questionnaires after analysis of the data had begun. Approximately 31 utility managers wrote to indicate their interest in the study but, for one reason or another, they were unable to complete and return an attitude survey questionnaire. Reasons for not replying included not being subjected to state regulation or for being subjected to federal regulation only. Other individuals indicated some difficulty in responding to the questionnaire because of their

inability to give an unqualified response to many of the statements, or because they were subjected to regulatory control by a number of states and their response would vary for each state.

Considering these replies, however, as partial responses brings the total return from utility managers to 158 or approximately 36% of the mailing.

A few of the commissions also replied by letter to indicate their decision not to complete an attitude survey questionnaire. In addition to some late returns this represented replies from 9 additional states bringing the total returns from commission personnel to 27 state commissions or 52% of the states.

Identification of Utility Group Combinations

Each utility group was considered as a unit as well as in combination with other utility groups. For ease in identifying the different combinations of utility groups the combination of utility group 8 and utility group 9 was refered to as utility group 8-9; the combination of utility groups 2, 3, and 4 was refered to as utility group 2-3-4; the combination of utility groups 1, 2, 3, and 4 was refered to as utility group 1-4; and the combination of utility groups 1, 2, 3, 4, and 7 was refered to as utility group 1-7.

Result of Analysis of Returns Before and After Follow-up Letter

The scored responses to questionnaires received "before" and "after" the possible influence of the follow-up letter were analyzed for indication

of a possible change in the composition of either utility group 1-4 or utility group 8-9. A comparison of mean scores to each statement between "before" and "after" respondents in utility group 8-9 is shown in Figure 3. This same comparison for respondents in utility group 1-4 is shown in Figure 4. Each point represents the mean scored response to one of the statements on the attitude survey questionnaire. Those statements with significantly different mean scores are circled and identified with the statement number.

Within either group the mean scores of the "before" and "after" respondents did not differ significantly on the whole. Three statements showed a significant difference in mean scores within utility group 8-9 and two statements within utility group 1-4. These differences however did not suggest that there was any change in the composition of the "before" and "after" groups. Further analysis of the data was therefor without differentiation regarding when the questionnaires were returned.

Scored Response Indicative of Opinion

A utility group's mean score on an attitude group indicates the utility group's opinion about the appropriate attitude variable. A utility group's mean score, whether for a specific statement or for an attitude group, has no absolute significance, and comparisons between statements based on the mean scores cannot be made. A utility group's mean score on any statement or attitude group can, however, be compared with other utility groups. This provides an indication of the relative position of each of the utility groups along the appropriate attitude

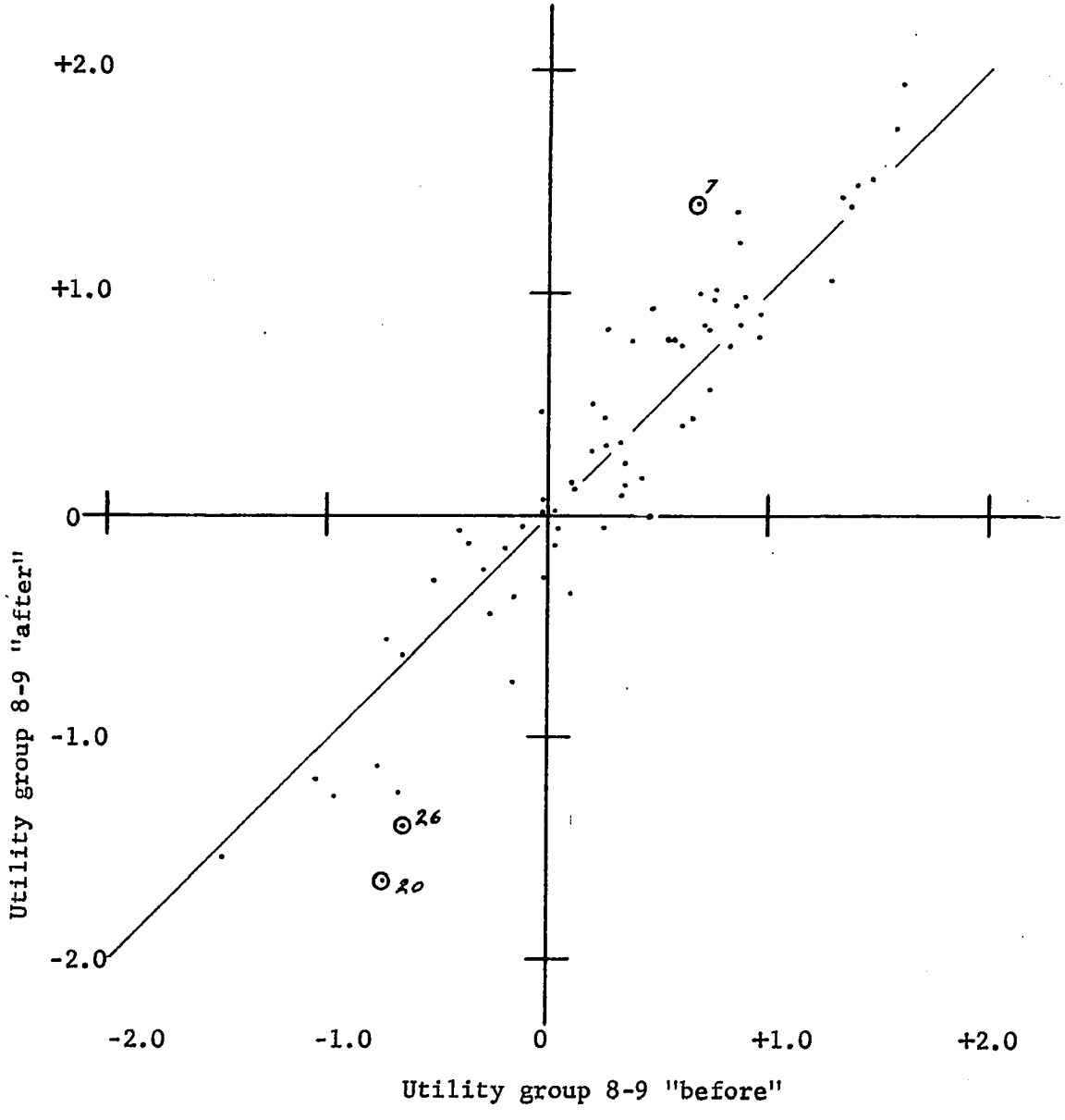


Figure 3. Mean scores by statement for "before" and "after" respondents within utility group 8-9

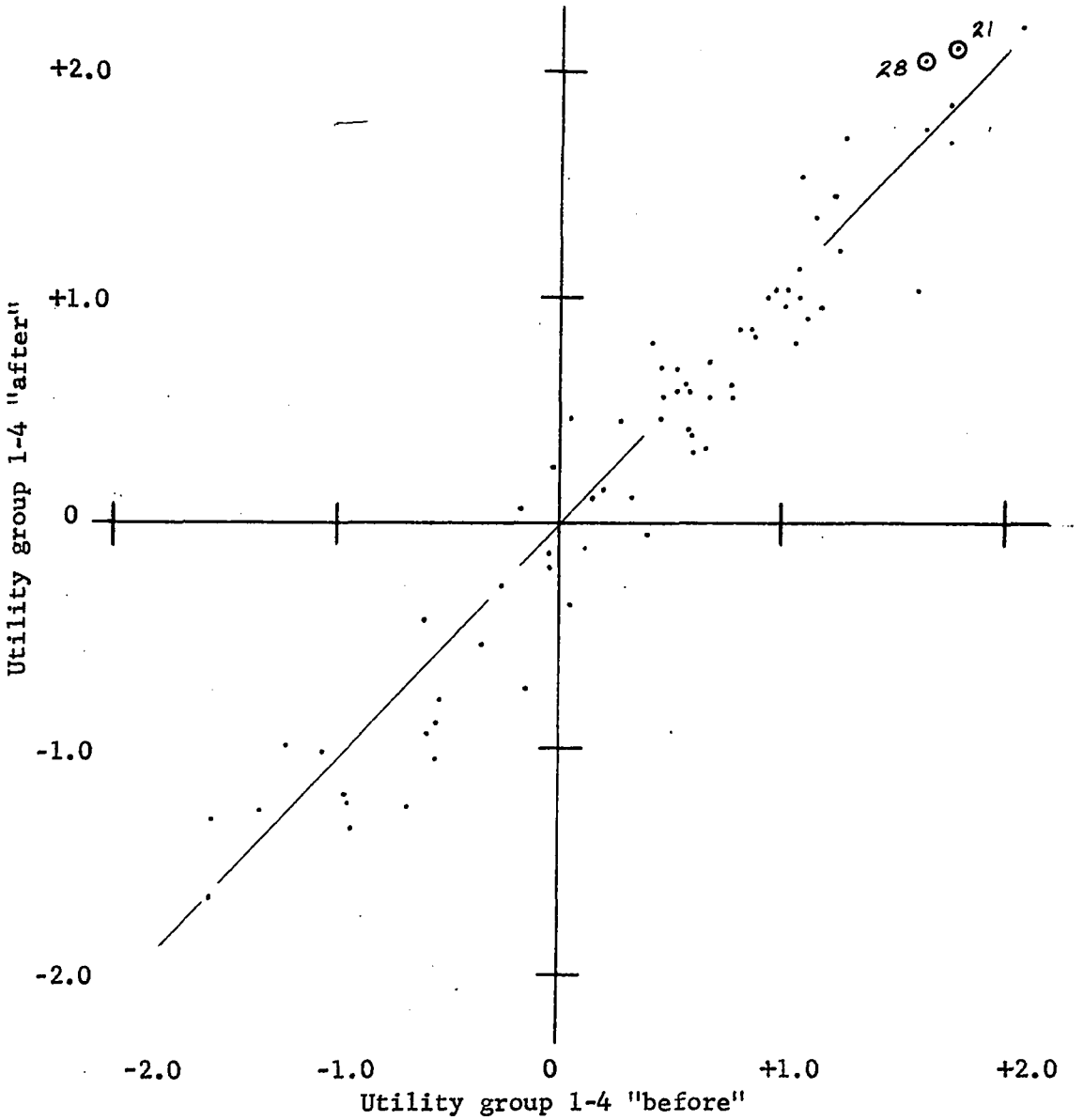


Figure 4. Mean scores by statement for "before" and "after" respondents within utility group 1-4

continuum.

Each utility groups's mean score on an attitude group was compared statistically with every other utility group. Those utility groups and the specific attitude groups where differences in mean scores tested significant are indicated in Figure 5 and Figure 6. Very few attitude group mean scores tested significantly different when utility groups 1, 2, 3, 4, and 7 were compared or when utility group 1 was compared with utility group 2-3-4. A majority of the attitude group mean scores tested significant, however, when utility groups 1, 2-3-4, or 1-7 were compared with utility group 8-9.

A comparison of the attitude group mean scores by utility group 8 and utility group 9 found no significant differences between these two utility groups.

Utility group 7 was considered individually and as a part of utility group 1-7. Because this utility group included only 5 respondents, no findings were drawn concerning this utility group individually.

Results of Analysis of Attitude Group Scores

Before reviewing each attitude group individually it was necessary to provide a guide for interpreting the relative significance of an attitude group mean score.

The attitude group mean score was obtained by adding the individual scores for those statements within the attitude group after changing the sign on scores for those statements which correlated negatively with the other statements within the attitude group. A high positive mean score

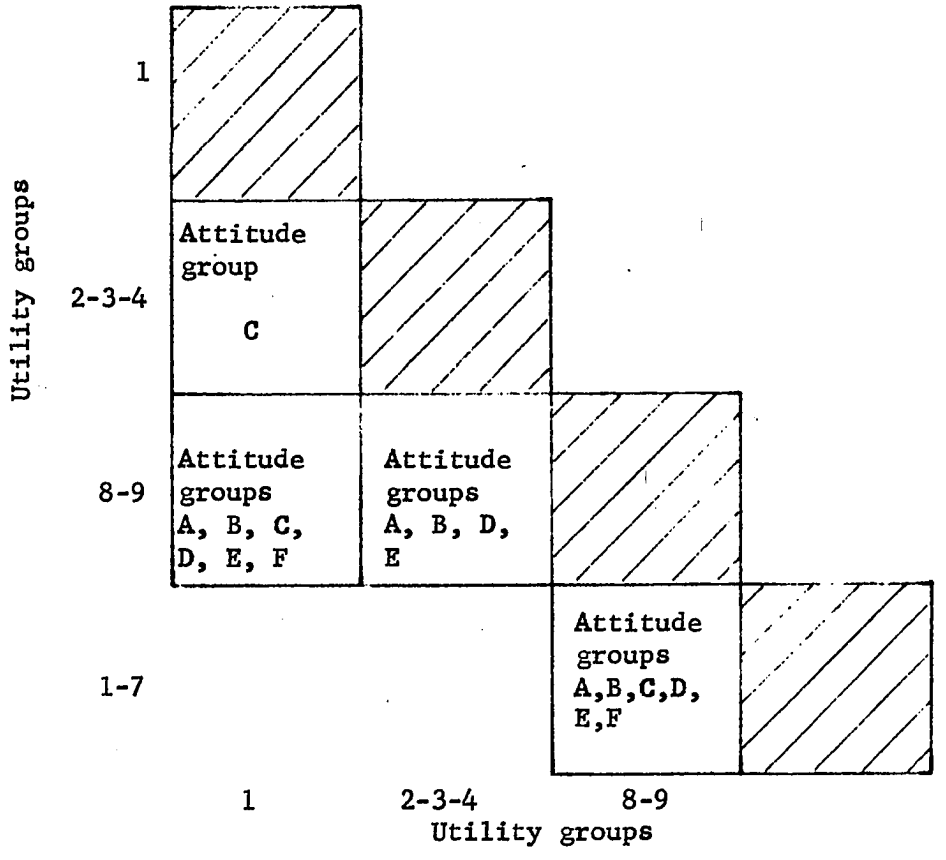


Figure 5. Attitude groups with significantly different mean scores by utility groups

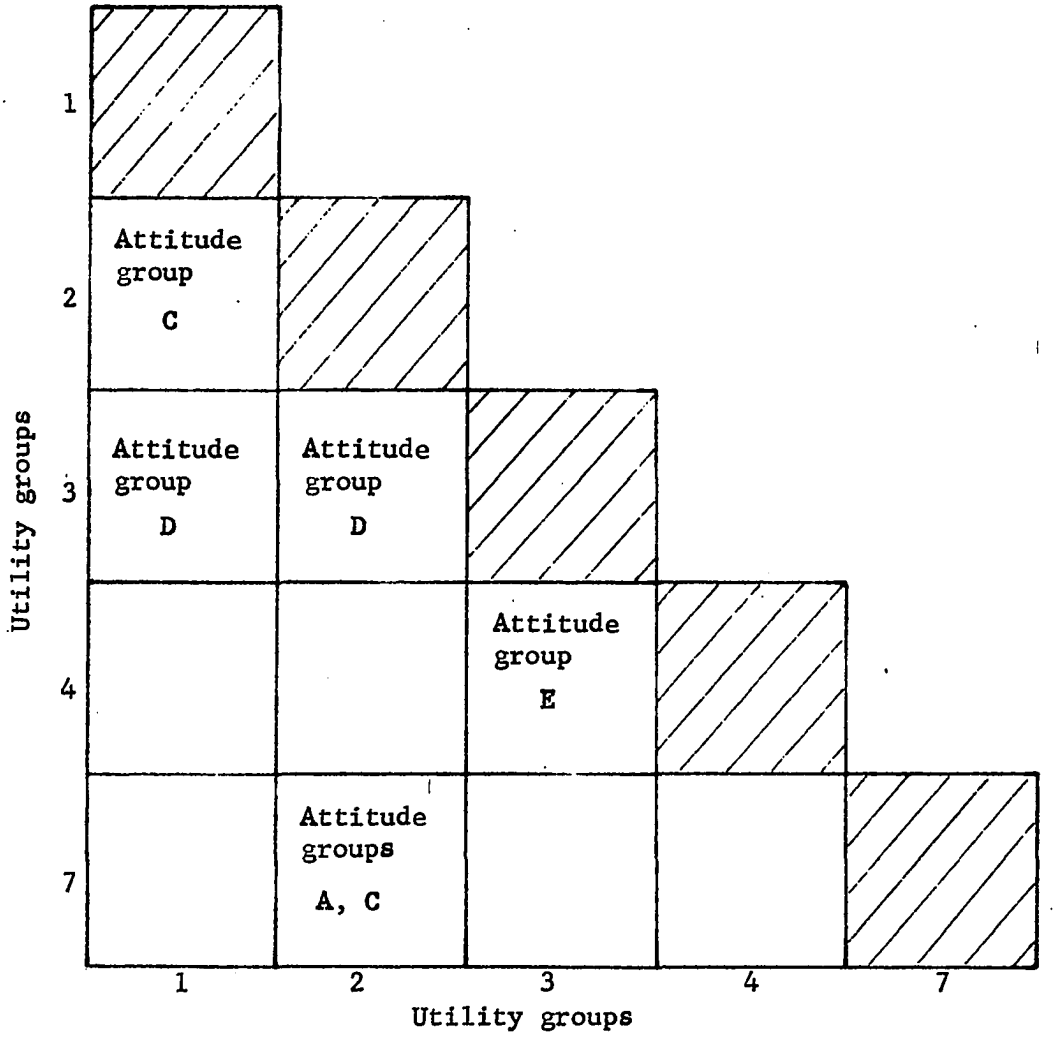


Figure 6. Attitude groups with significantly different mean scores by utility groups

therefore would indicate that a utility group held opinions along the highly favorable portion of the attitude continuum. A moderately positive mean score would indicate opinions along the moderately favorable portion of the attitude continuum. A low positive mean score would indicate opinions in the favorable portion of the attitude continuum but lying close to its center position or uncertainty. A zero score would indicate uncertainty and a negative mean score would indicate opinions along the unfavorable portion of the attitude continuum.

Table 4 provides a guide for interpreting the relative location of a utility group along the attitude continuum for each of the attitude groups based on the attitude group mean scores. A utility group's position along the attitude continuum provides a relative indication of the opinions held by that group.

All reference to attitude group scores or statement scores refers to the mean score for all respondents in a utility group.

Attitude group A

Attitude group A consisted of 4 statements with high intercorrelation each of which expressed an opinion about attitude variable I: To what degree does regulation currently influence managerial performance?

A comparison of attitude group A scores by utility groups is shown in Figures 7 and 8.

Utility groups 1, 2, 3, and 4 did not differ significantly in their scores on this attitude group.

Utility group 8-9 however did differ significantly with utility group 1, utility group 1-7, and utility group 2-3-4 in their score on

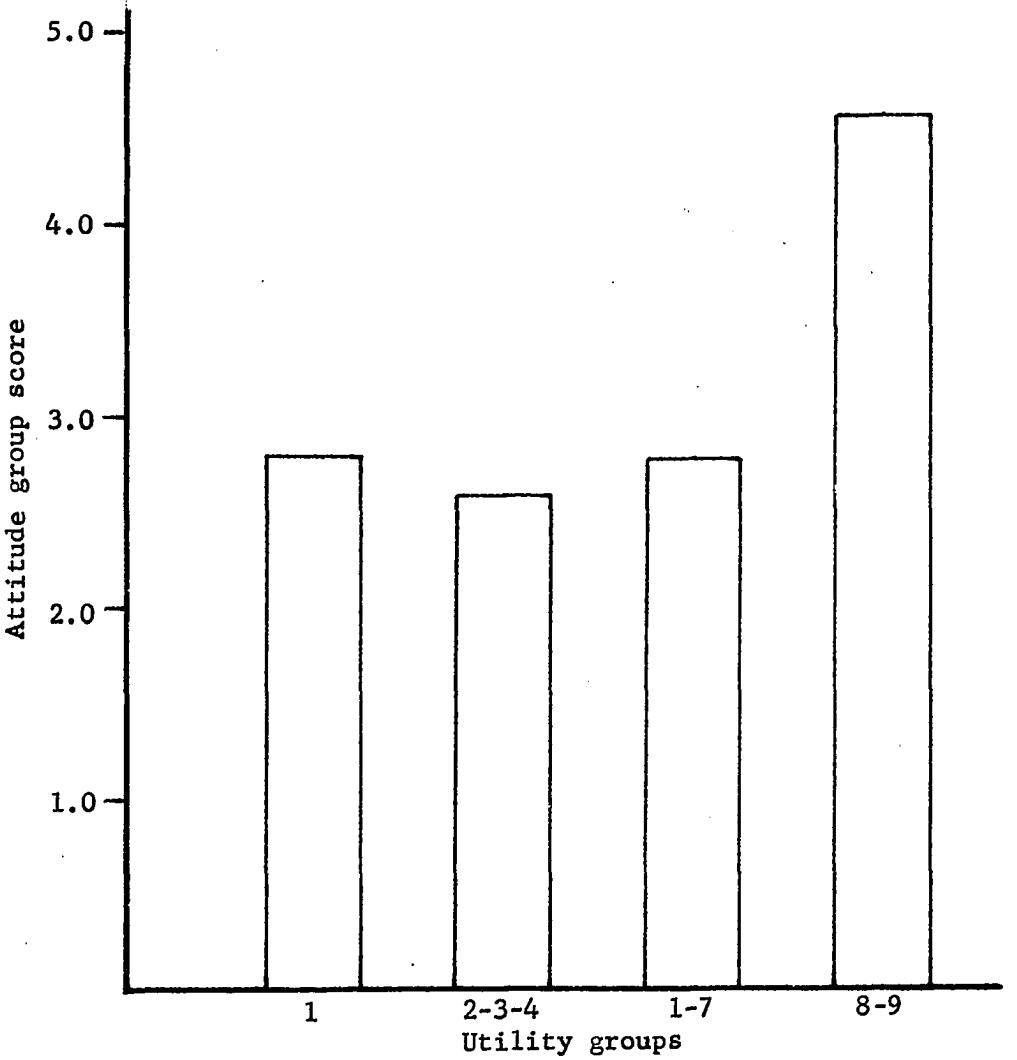


Figure 7. Attitude group A score by utility groups

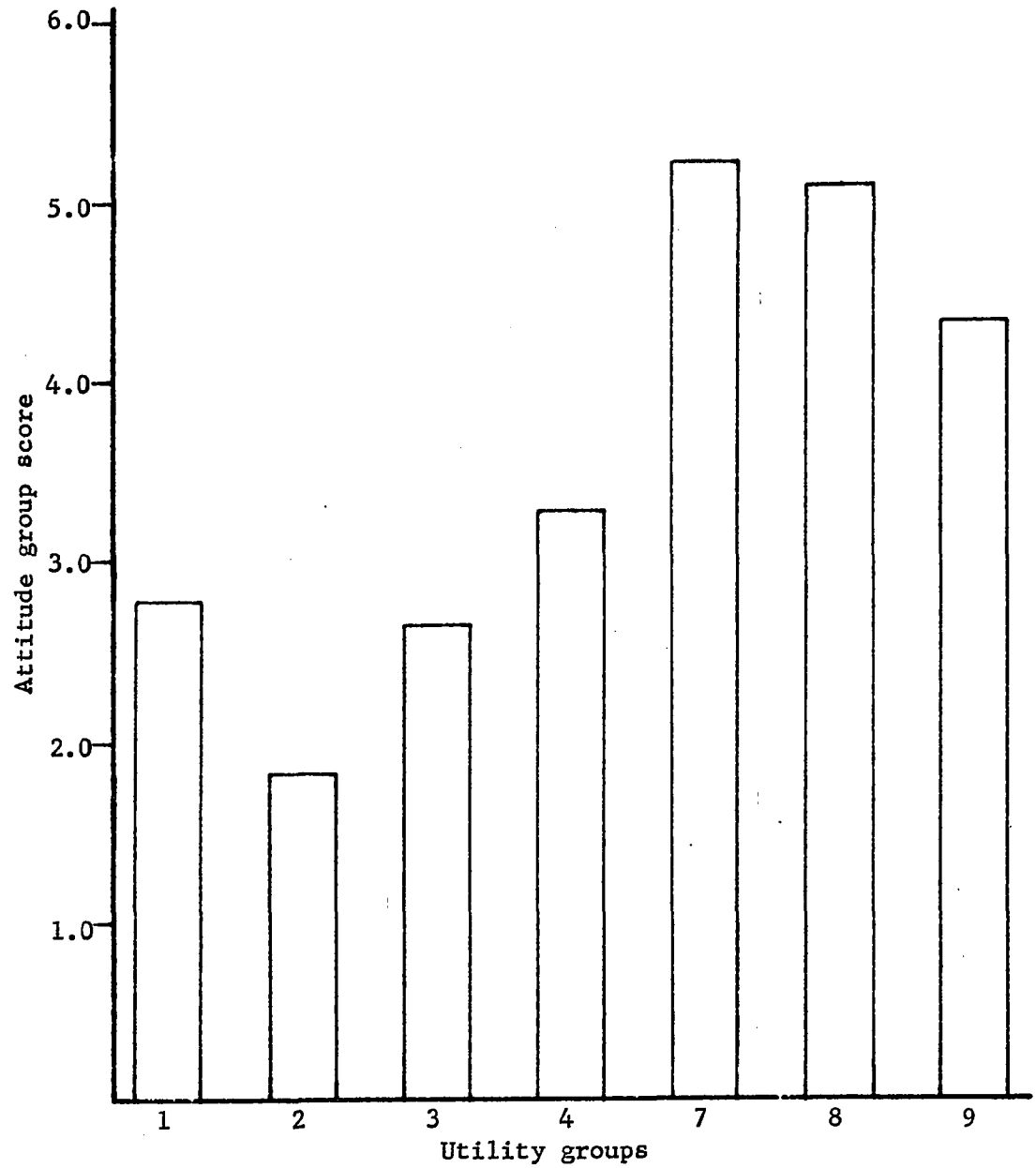


Figure 8. Attitude group A score by utility groups

Table 4. Attitude scores indicating various positions along an attitude continuum

Attitude group	Number of statements in attitude group	Average unscored response 60-70	75-85	90-99
		Position along favorable portion attitude continuum		
		Low	Moderate	High
A	4	1.0- 2.1	2.7- 4.1	5.1- 9.3
B	4	1.0- 2.1	2.7- 4.1	5.1- 9.3
C	4	1.0- 2.1	2.7- 4.1	5.1- 9.3
D	8	2.0- 4.2	5.4- 8.3	10.3-18.6
E	6	1.5- 3.1	4.0- 6.2	7.7-14.0
F	4	1.0- 2.1	2.7- 4.1	5.1- 9.3
G	15	3.8- 7.9	10.0-15.6	19.2-34.9

attitude group A.

With Table 4 as a guide, it is noted that commission personnel, as a group, scored in the moderate to highly favorable portion of the attitude continuum. This expresses opinions which are moderate to highly favorable toward current regulation and its influence on managerial performance.

Utility managers, utility groups 1, 2-3-4, or 1-7 expressed only moderately favorable opinions regarding the current influence of regulation on managerial performance.

Attitude group B

Attitude group B consisted of 4 statements with high intercorrelation each expressing an opinion about attitude variable II: To what degree is

it possible to measure managerial performance?

A comparison of attitude group B scores by utility groups is shown in Figures 9 and 10.

Utility groups 1, 2, 3, 4, and 7 did not differ significantly between themselves in their scores for this attitude group. Utility group 1, utility group 2-3-4, and utility group 1-7 however each differed significantly with utility group 8-9 when attitude group scores were compared.

This indicates a basic agreement among utility managers regarding the possibility of measuring managerial performance. Their scores on this attitude group were in the moderate to highly favorable portion of the attitude continuum. This is indicative of quite positive opinions that managerial performance can be measured.

Commission personnel scored significantly lower along the attitude continuum indicating low opinions regarding the possibility of measuring managerial performance.

Attitude group C

Attitude group C consisted of 4 statements with high intercorrelation each expressing an opinion about attitude variable III: To what degree is research and investigation needed on a method or methods for providing incentive to utilities through regulation?

A comparison of attitude group C scores by utility groups is shown in Figures 11 and 12.

Utility group 1 and utility group 2 had significantly different mean scores on this attitude group. The telephone managers scored high,

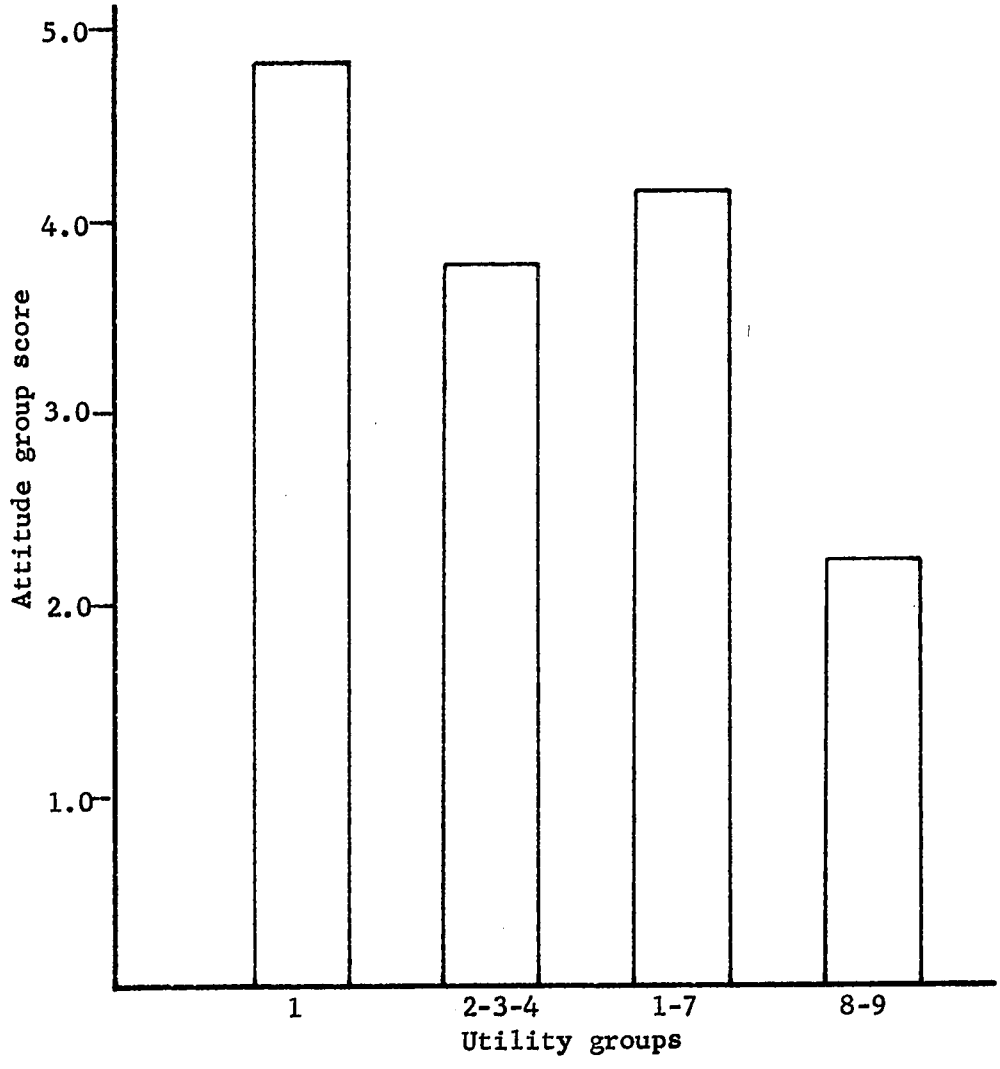


Figure 9. Attitude group B score by utility groups

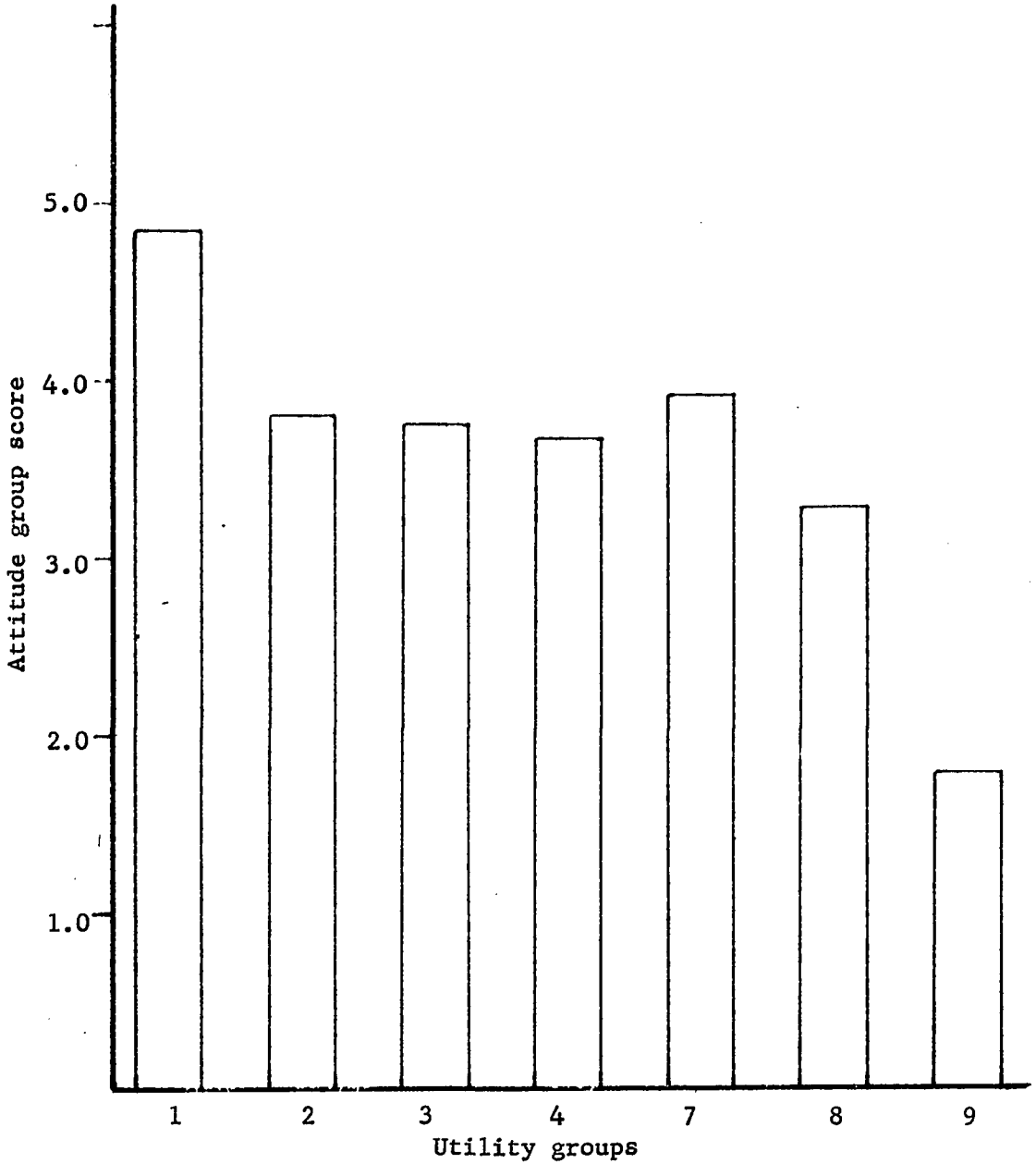


Figure 10. Attitude group B score by utility groups

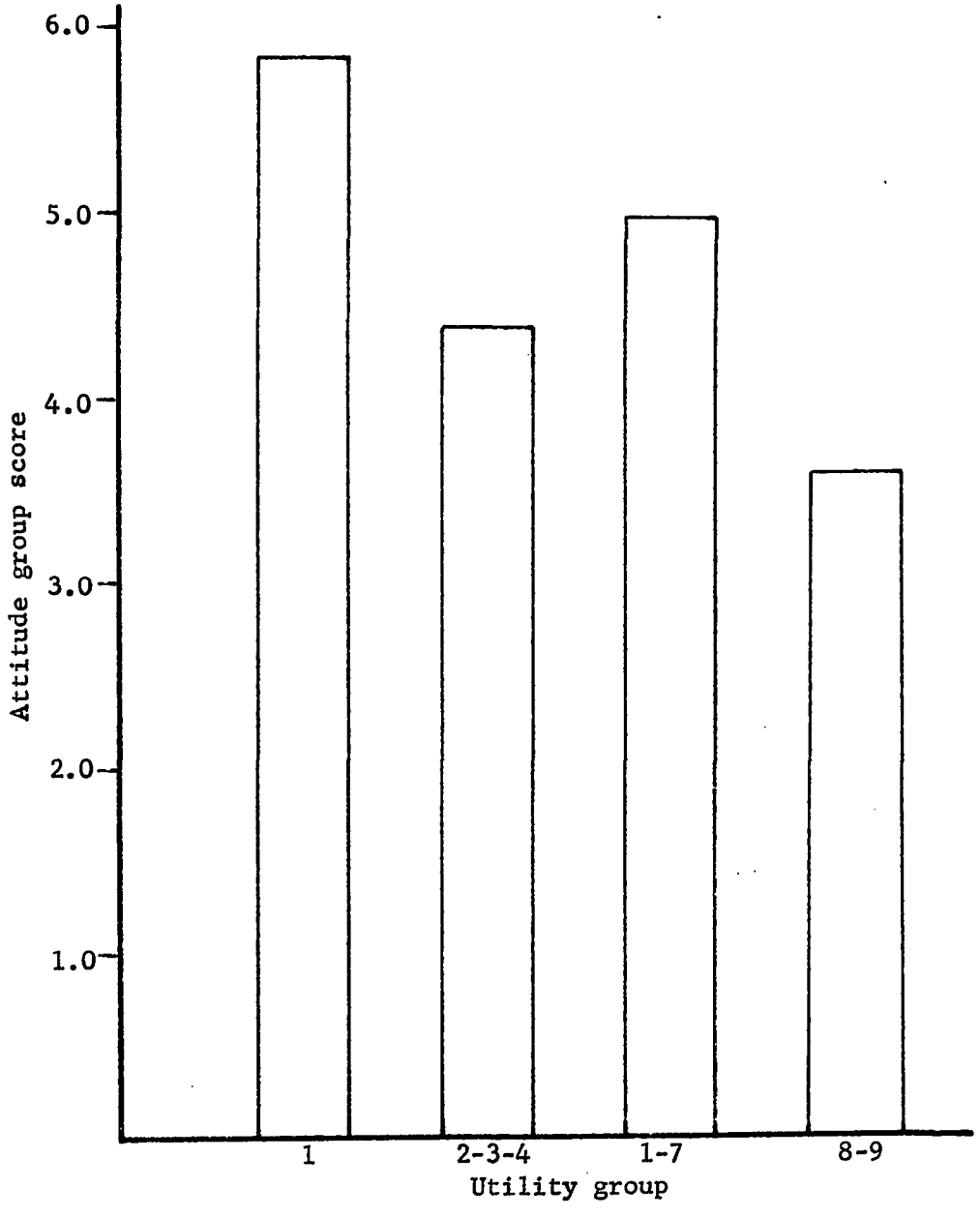


Figure 11. Attitude group C score by utility groups

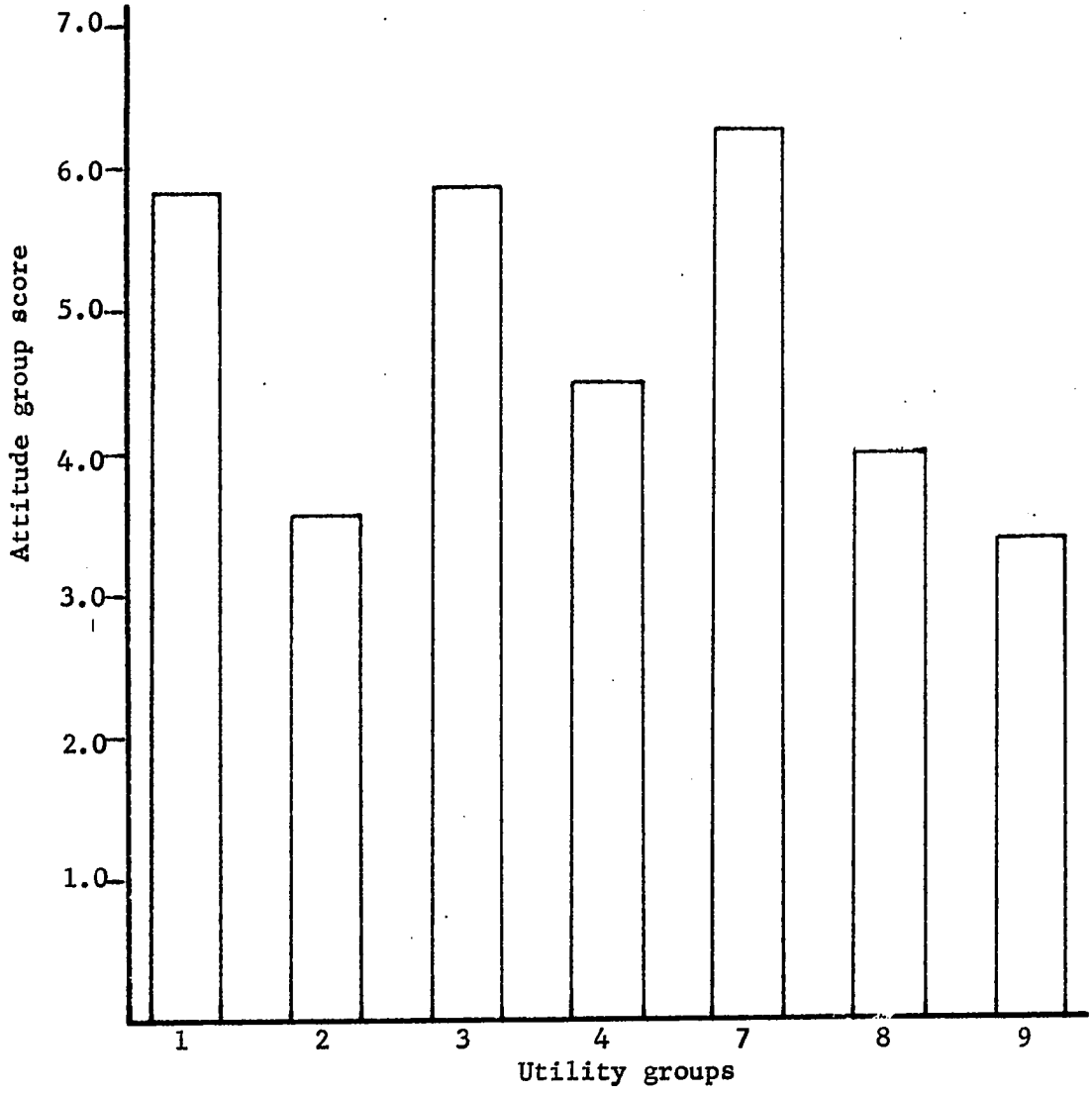


Figure 12. Attitude group C score by utility groups

indicating highly positive opinions that research is needed. Gas utilities indicated only moderately positive opinions.

Utility group 2-3-4 differed significantly with utility group 1 in their response to this attitude group. This was influenced partially by utility group 2.

Utility group 8-9 and utility group 2 had similar scores for this attitude group. Altho utility group 8-9 did not differ with utility group 2-3-4 in their response to this attitude group they did differ significantly with utility group 1.

This indicates less unanimity between the different utility groups concerning their opinions about the need for research in this area. The differences however are in degrees of positiveness, for each expressed positive opinion that a certain amount of research is necessary.

Attitude group D

Attitude group D consisted of 8 statements with high intercorrelation each expressing an opinion about attitude variable IV: To what degree should regulation attempt to motivate exceptional managerial performance?

A comparison of attitude group D scores by utility groups is shown in Figures 13 and 14.

Some lack of agreement is again noted between the different utility groups. Utility group 3 scored significantly different on this attitude group than did either utility group 1 or utility group 2. Utility group 1 and utility group 8-9 also differed significantly in their scores on this attitude group.

Each of the utility groups scored in the highly favorable portion of

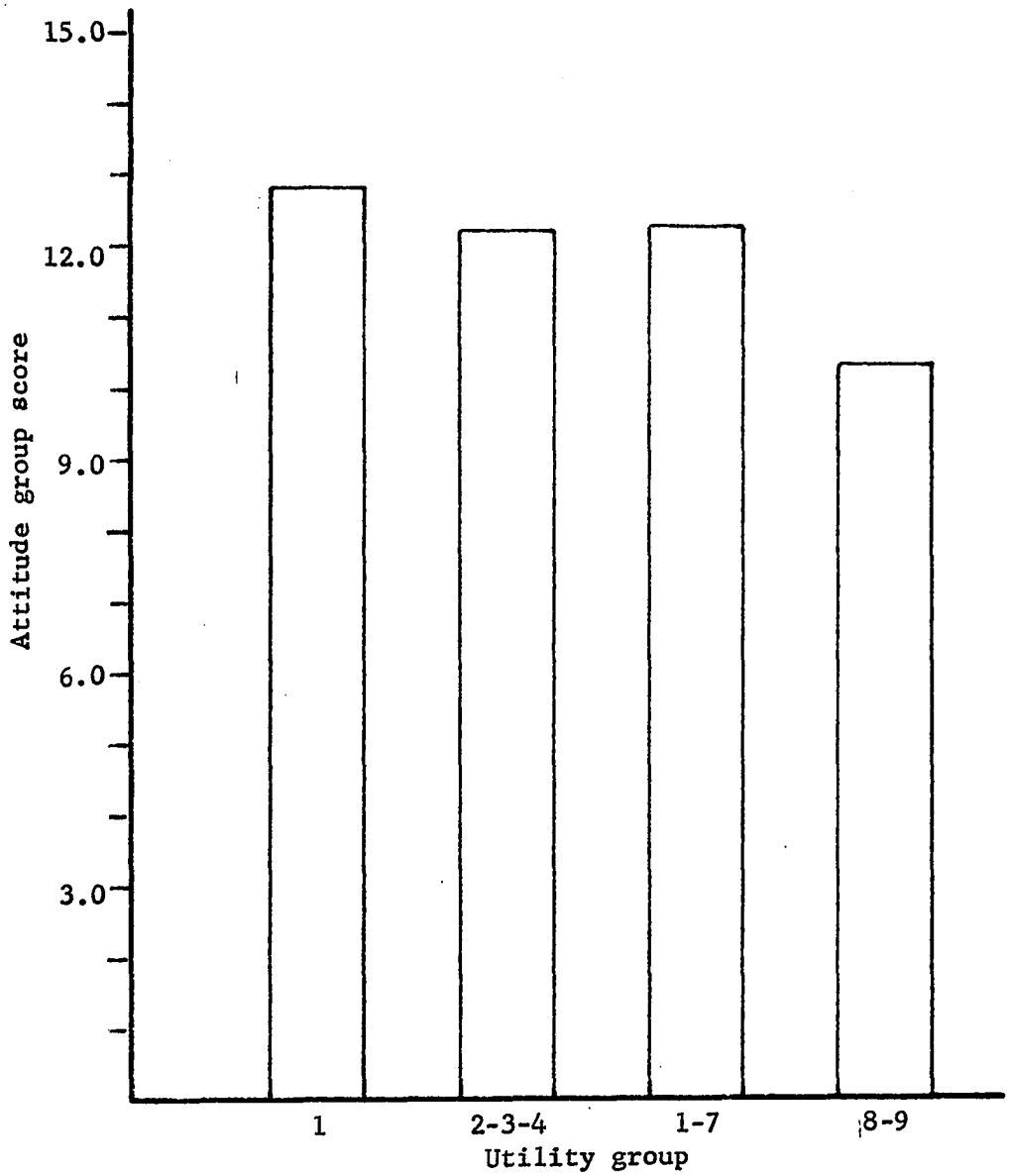


Figure 13. Attitude group D score by utility groups

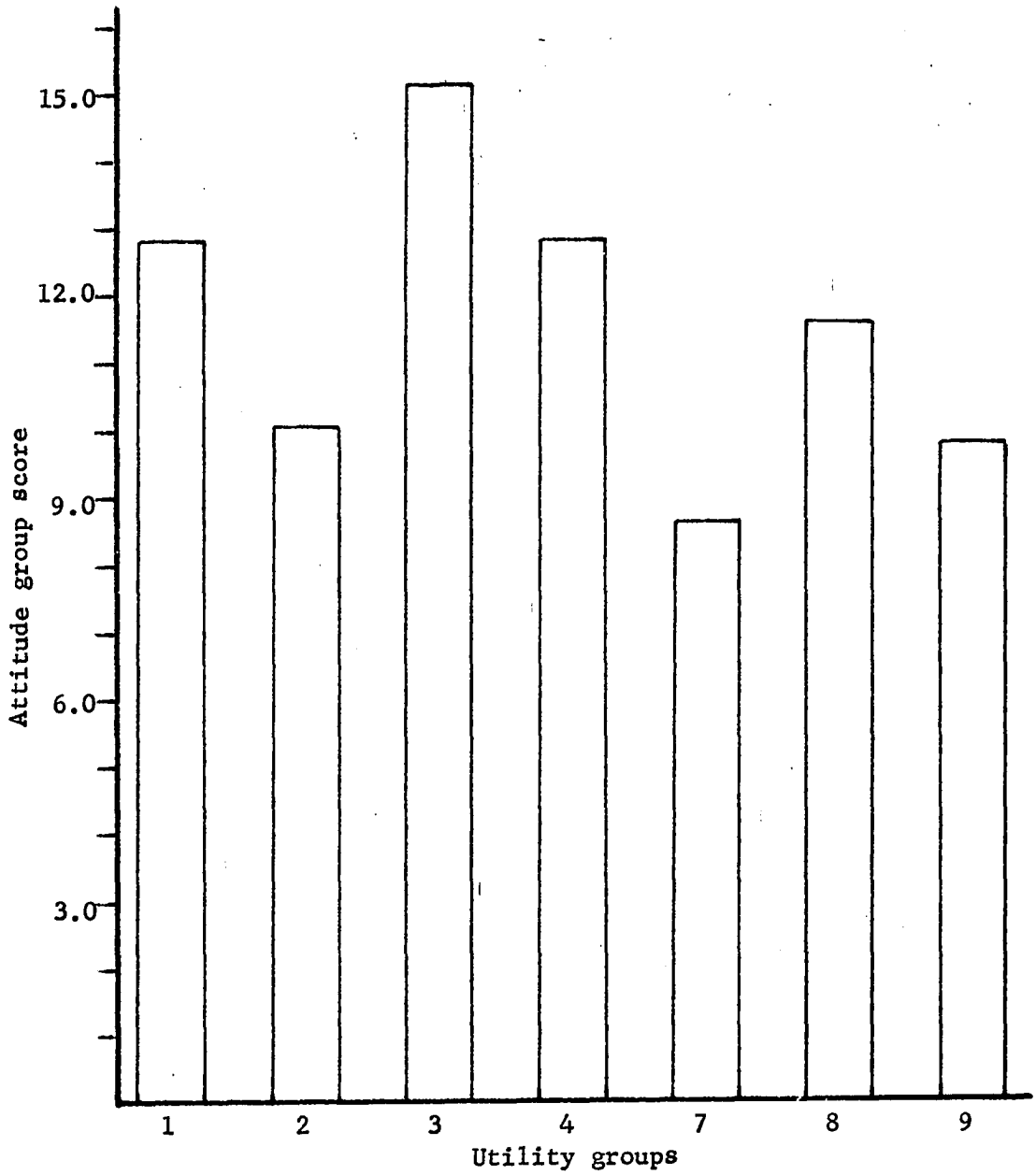


Figure 14. Attitude group D score by utility groups

the attitude continuum indicating strong opinions that regulation should attempt to motivate exceptional managerial performance. Even so, utility managers as a group, utility group 1-7, were significantly more positive in their opinions that regulation should attempt to motivate exceptional managerial performance than utility group 8-9.

The telephone utility managers scored highest on this attitude group indicating they held the most positive opinions about the need for regulation attempting to motivate exceptional managerial performance.

Attitude group E

Attitude group E consisted of 6 statements with high intercorrelation each expressing opinions about attitude variable V: To what degree is the rate of return important as a motivator of exceptional managerial performance?

A comparison of attitude group E scores by utility groups is shown in Figures 15 and 16.

Utility group 3 and utility group 4 scored significantly different on this attitude group. This difference however seems relatively insignificant when compared to the larger difference in scores between utility group 1 and utility group 8-9, and between utility group 2-3-4 and utility group 8-9.

Managers of electric utilities scored in the highly favorable portion of the attitude continuum expressing opinions that the rate of return was very important as a motivator of exceptional managerial performance. Utility managers as a group however, scored in the moderately favorable portion of the attitude continuum.

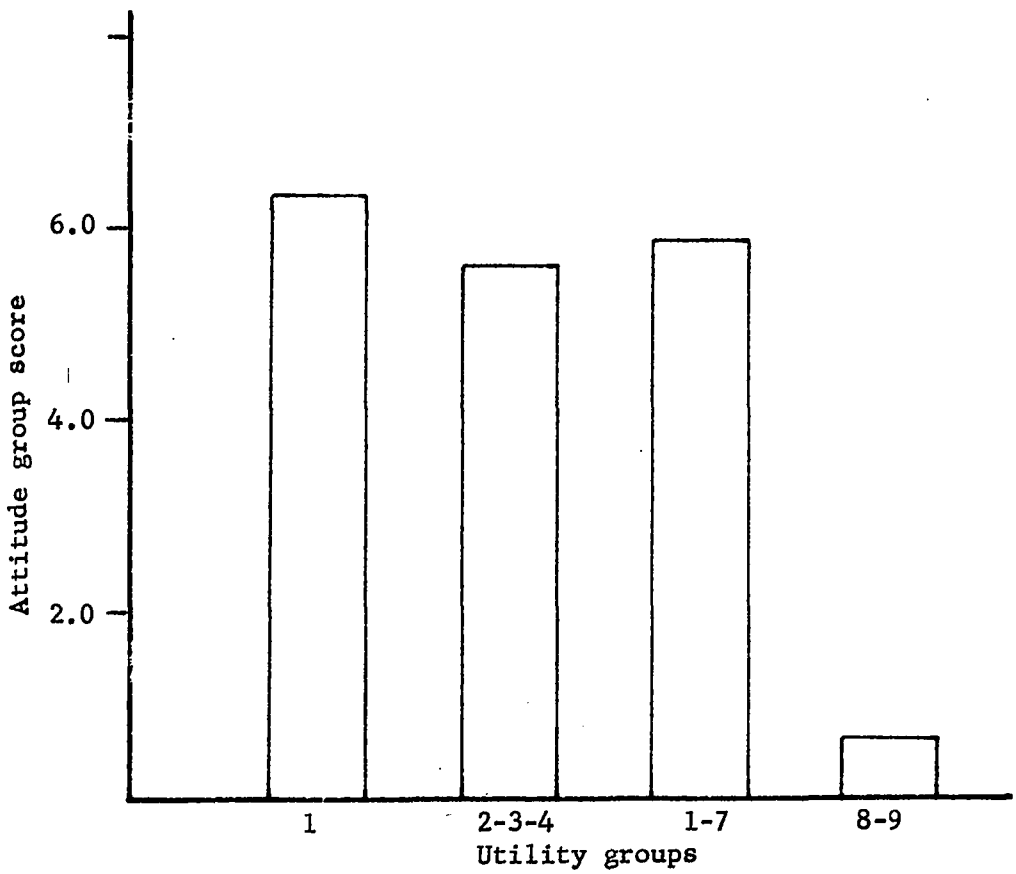


Figure 15. Attitude group E score by utility groups

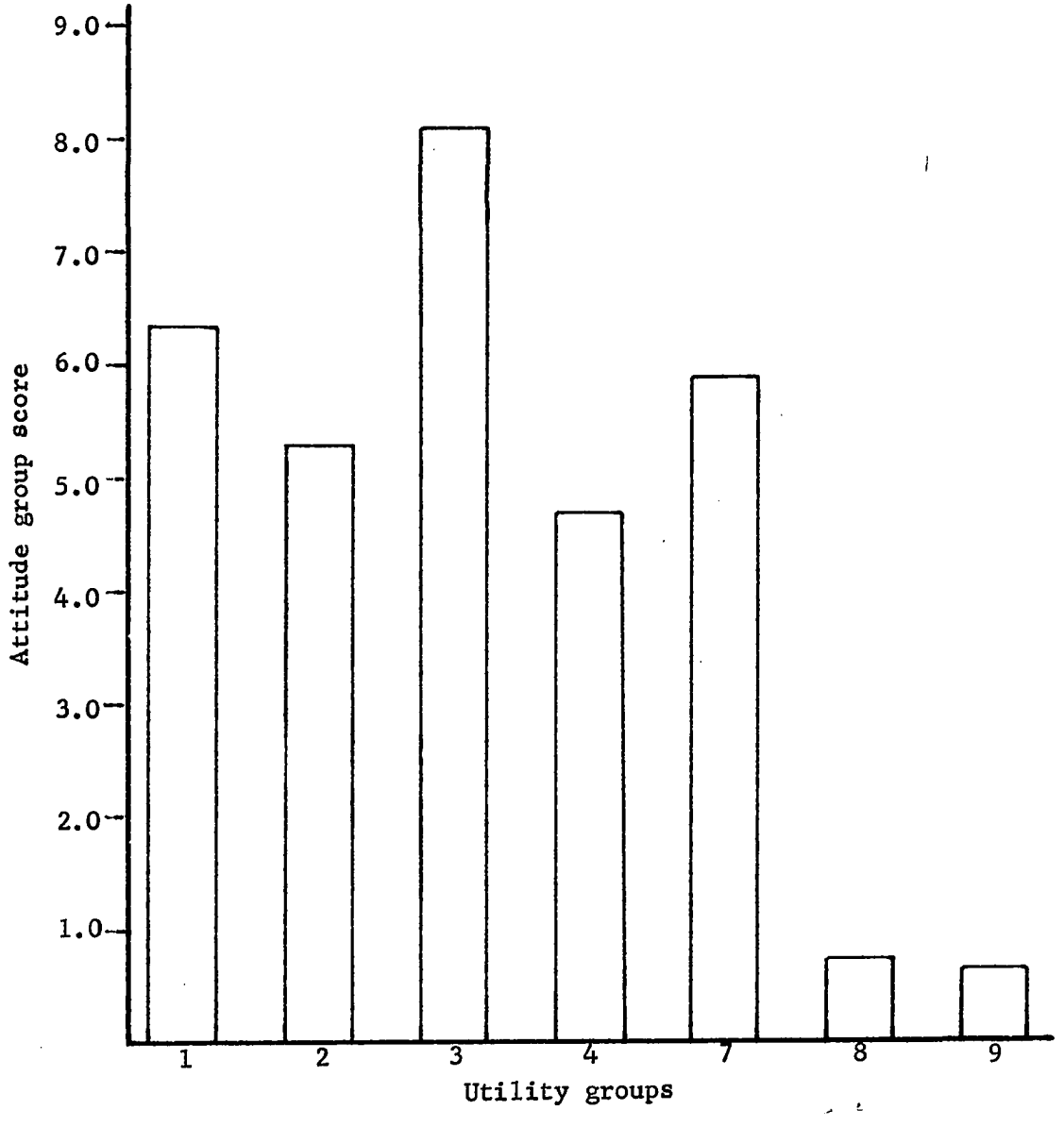


Figure 16. Attitude group E score by utility groups

Commission personnel scored in the very low favorable portion of the attitude continuum, approaching the center portion or uncertainty. This indicates considerable doubt among commission personnel regarding the importance of the rate of return as a motivator of managerial performance.

Attitude group F

Attitude group F consisted of 4 statements with high intercorrelation each expressing an opinion about attitude variable VI: To what degree is profit an indicator of exceptional managerial performance.

A comparison of attitude group F scores by utility groups is shown in Figures 17 and 18.

There was no significant difference in the mean scores for this attitude group between utility groups 1, 2, 3, 4, and 7. A significant difference in mean scores did occur when utility group 8-9 was compared with utility group 1, utility group 2-3-4, and utility group 1-7.

Utility managers scored along the low favorable portion of the attitude continuum. This indicates opinions which hold a very low positive regard for profit as an indicator of exceptional managerial performance.

Commission personnel scored in the negative portion of the attitude continuum. This score indicates a low degree of disagreement with opinions expressing profit as an indicator of exceptional managerial performance.

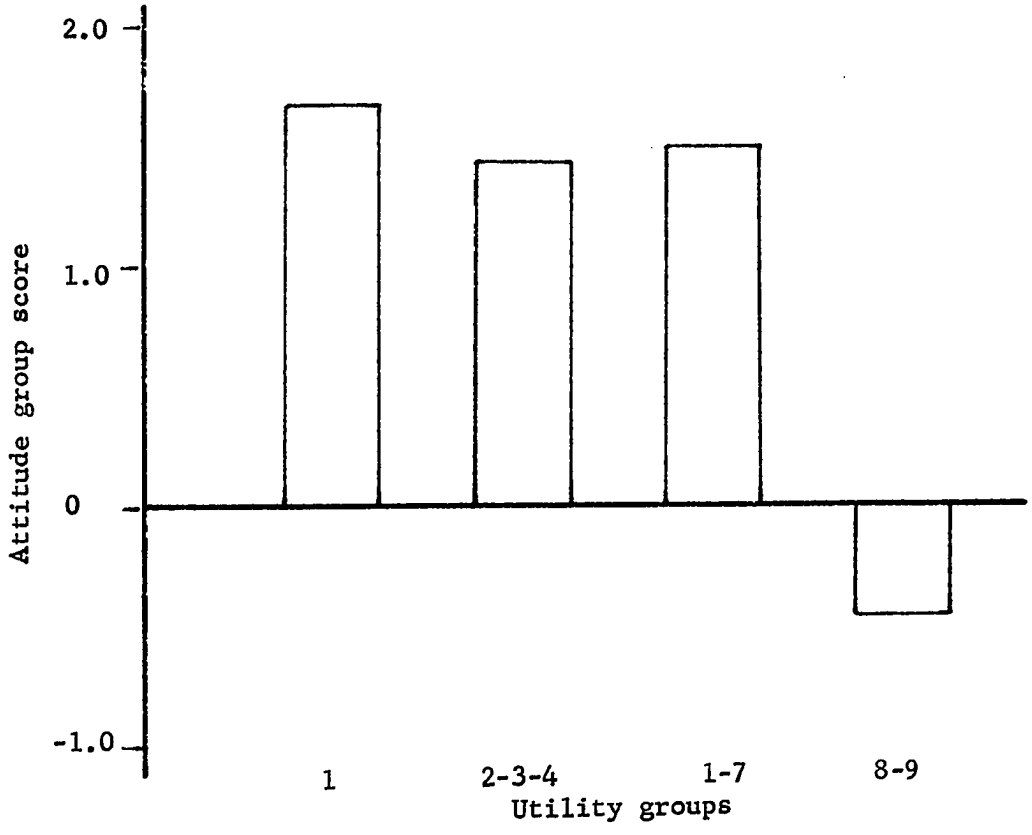


Figure 17. Attitude group F score by utility groups

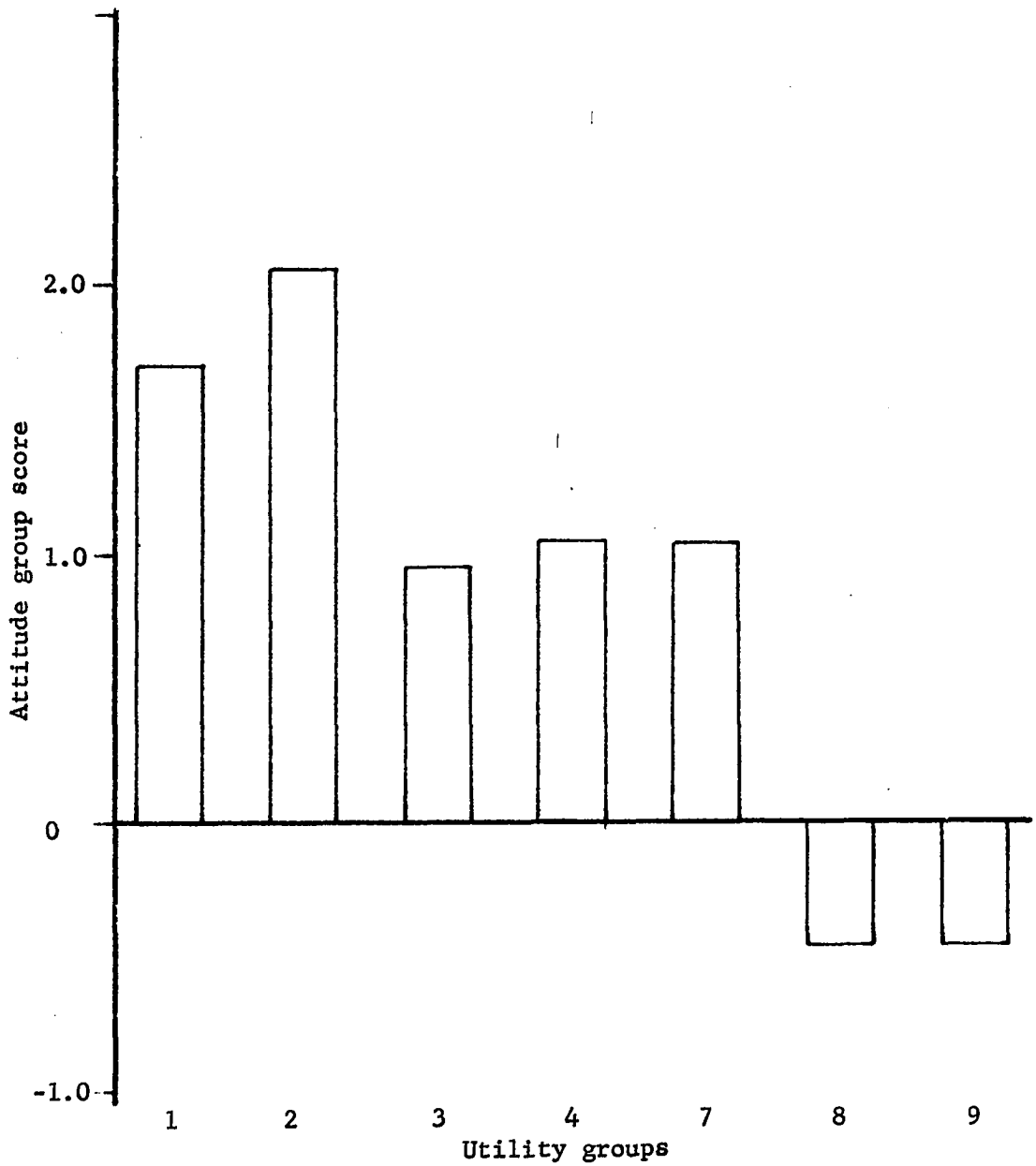


Figure 18. Attitude group F score by utility groups

Attitude group G

Attitude group G consisted of 15 statements with relatively high intercorrelation each expressing opinions about attitude variable VII: To what degree is the quality of a utility's interpersonal activities an indicator of exceptional managerial performance?

A comparison of attitude group G scores by utility groups is shown in Figures 19 and 20.

There was no significant differences in the scores for this attitude group between the different utility groups. Each utility group scored in the moderately favorable portion of the attitude continuum. This only indicates moderate acceptance of the group of statements as a whole.

Further analysis of the statements within this attitude group G was performed by grouping those statements which had reference to customers into one group and those statements which had reference to employees into a second group.

Statements 51, 54, 55, 65, 66, and 67 were indices of managerial performance which related to personnel activities. This group of statements was scored in the same manner as an attitude group. The scores by utility group are summarized in Figure 21. It was noted that while all utility groups held a moderate regard for the importance of indices which relate to the employee, the gas and electric utility groups as well as the commissioners held the highest regard for these indices. Commission personnel held these indices in lowest regard.

Statements 45, 46, 60, 63, and 64 were indices of managerial performance which related to customer activities. This group of statements was

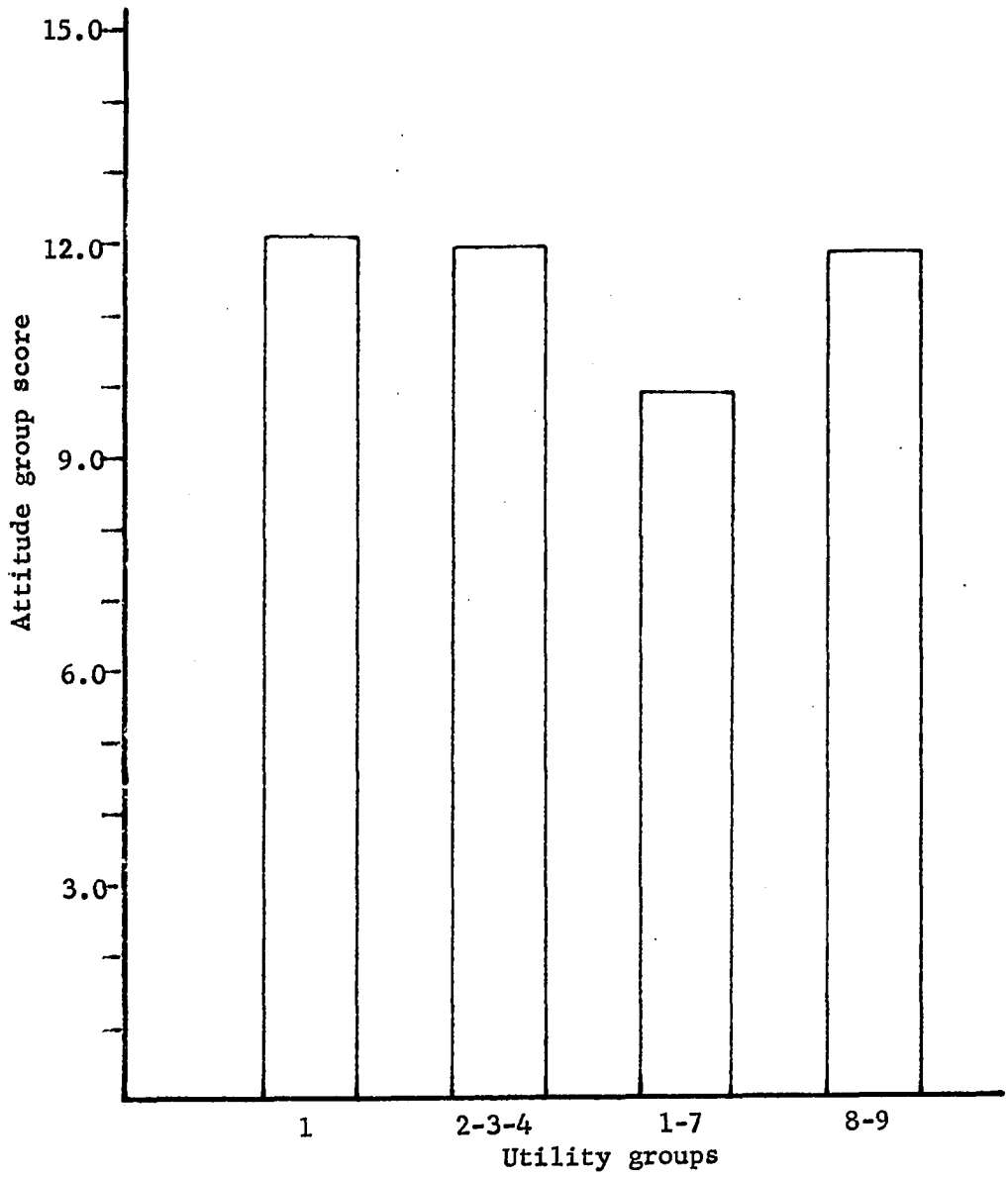


Figure 19. Attitude group G score by utility groups

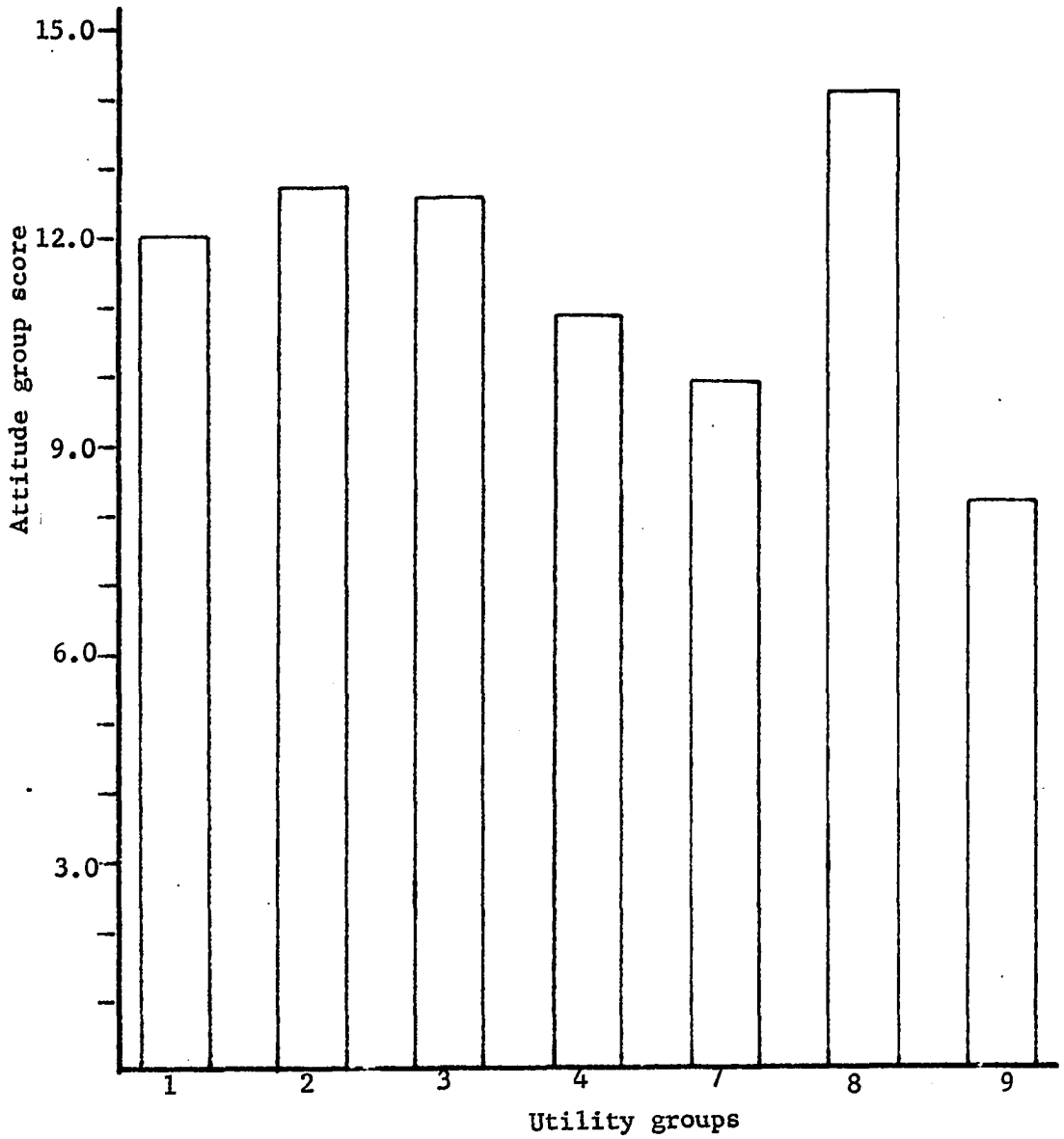


Figure 20. Attitude group G score by utility groups.

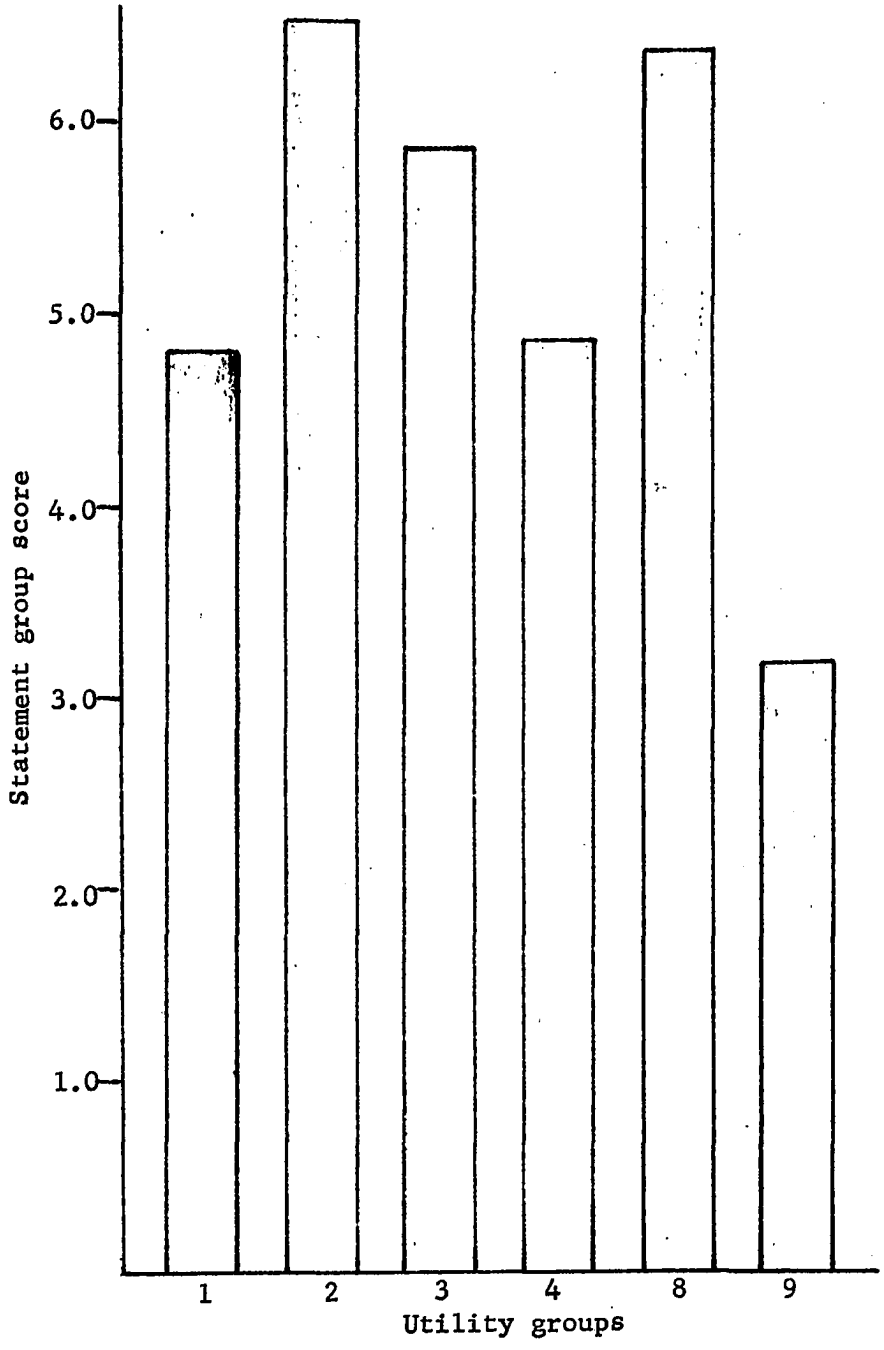


Figure 21. Mean score on statements from attitude group G related to employees by utility groups

also scored in the same manner as an attitude group. A comparison of the scores by utility groups is shown in Figure 22. These indices are also held in moderate regard by each utility group, but telephone managers and commissioners scored them the highest.

Results of Analysis of Individual Statement Scores

Further analysis of the data obtained from the attitude survey questionnaire was made by comparing the mean scores for each statement between utility groups, and by identifying those statements and utility groups with significantly different mean scores. The results of these comparisons are shown in Figures 23 through 37. Each point represents the mean score on a statement for the appropriate utility group. Statements with significantly different mean scores are circled and identified by the statement number.

The comparison of mean scores by statement between utility group 7 and utility groups 1, 2, 3, and 4 is shown in Figures 23, 24, 25, and 26. Due to the small number of respondents in utility group 7, a large difference in mean scores was necessary before the "student's" t-test indicated the difference was significant. Utility group 7 did not give indications of being basically different from utility groups 1, 2, 3, or 4.

The comparison of mean scores for each statement between utility group 8 and utility group 9 is shown in Figure 27. It was found that these two utility groups responded very much the same to each statement. Those statements with significantly different mean scores were statements concerning the indices of exceptional managerial performance.

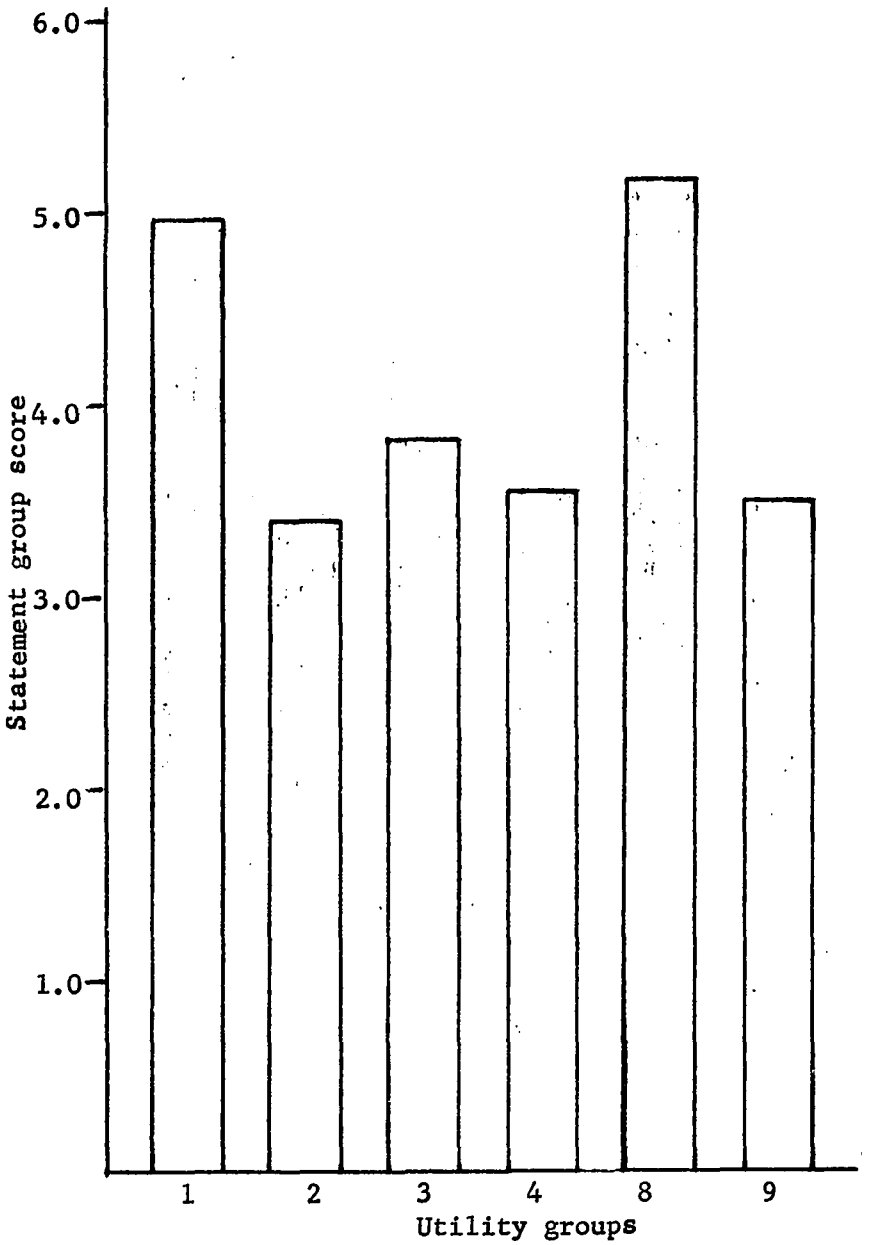


Figure 22. Mean score on statements from attitude group G related to customers by utility groups

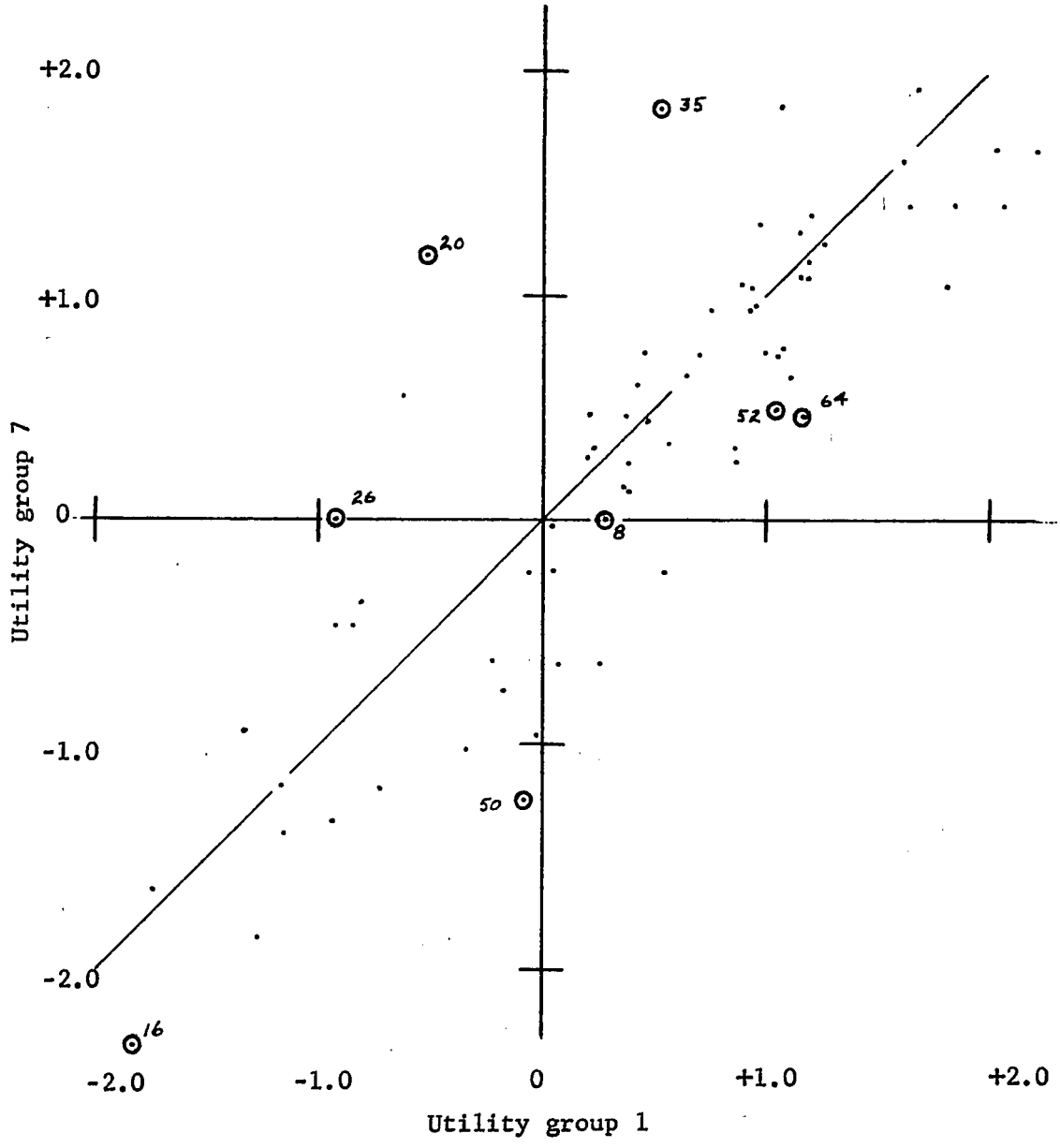


Figure 23. Mean scores by statement for utility group 1 vs utility group 7

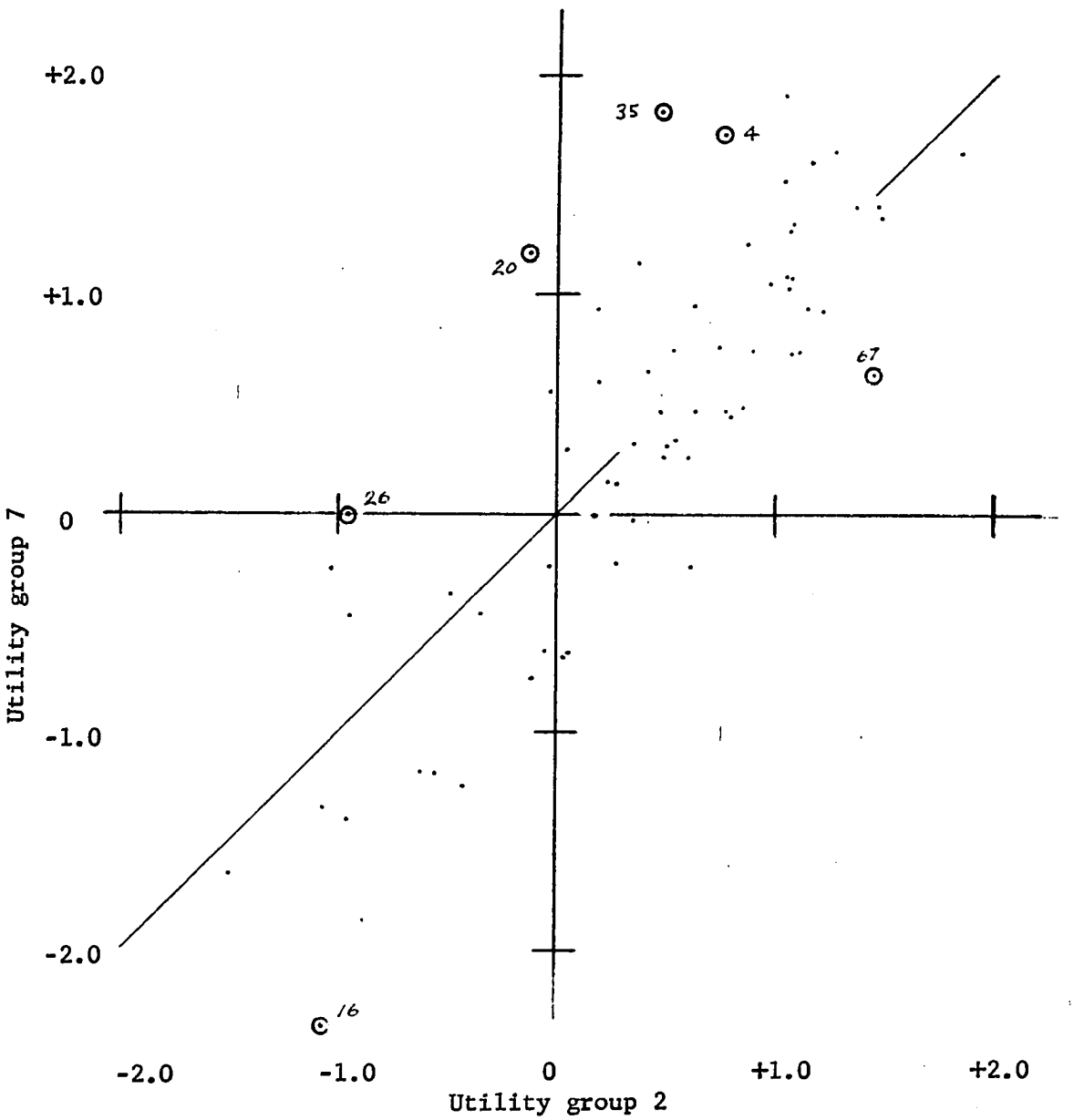


Figure 24. Mean scores by statement for utility group 2 vs utility group 7

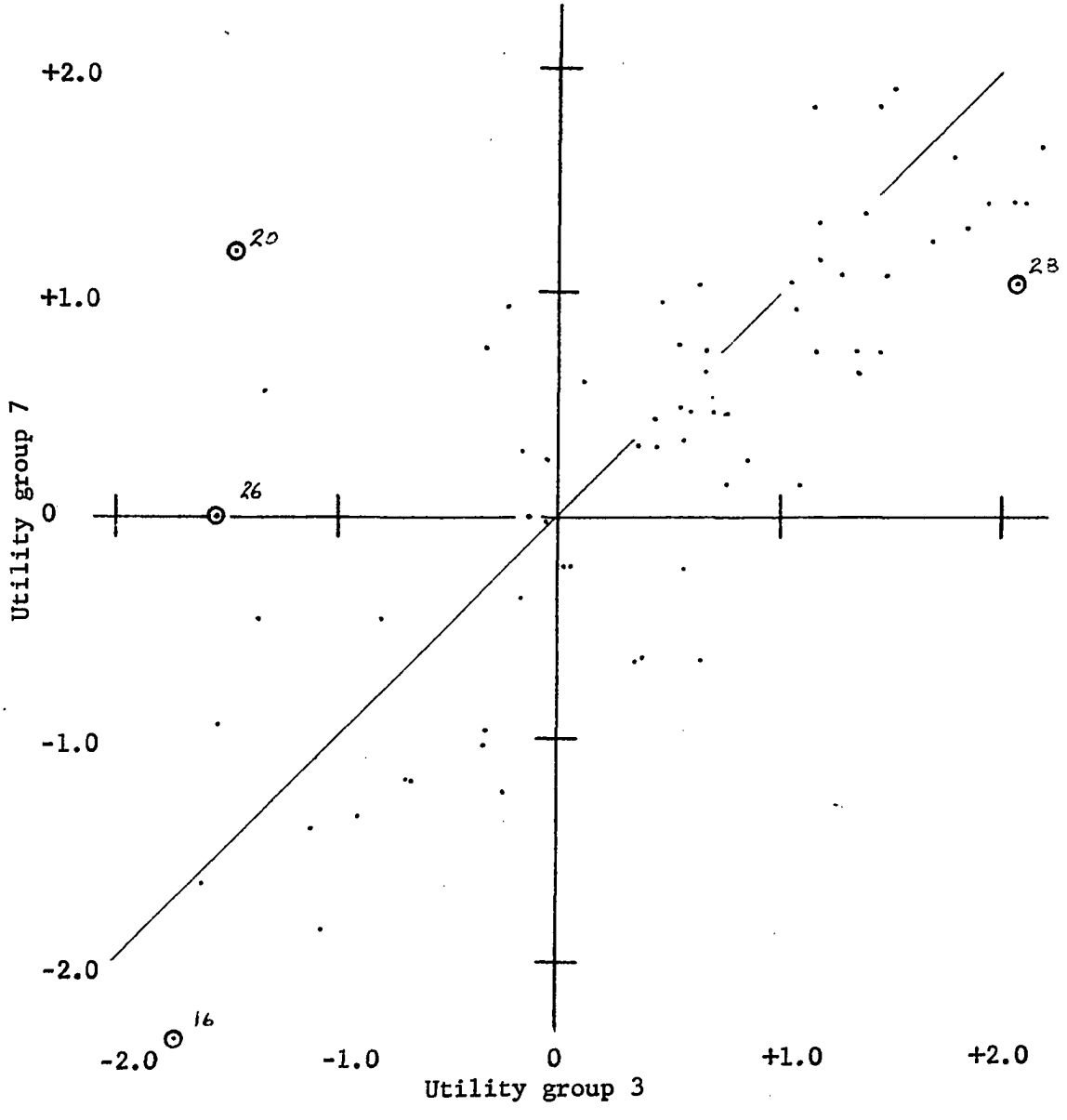


Figure 25. Mean scores by statement for utility group 3 vs utility group 7

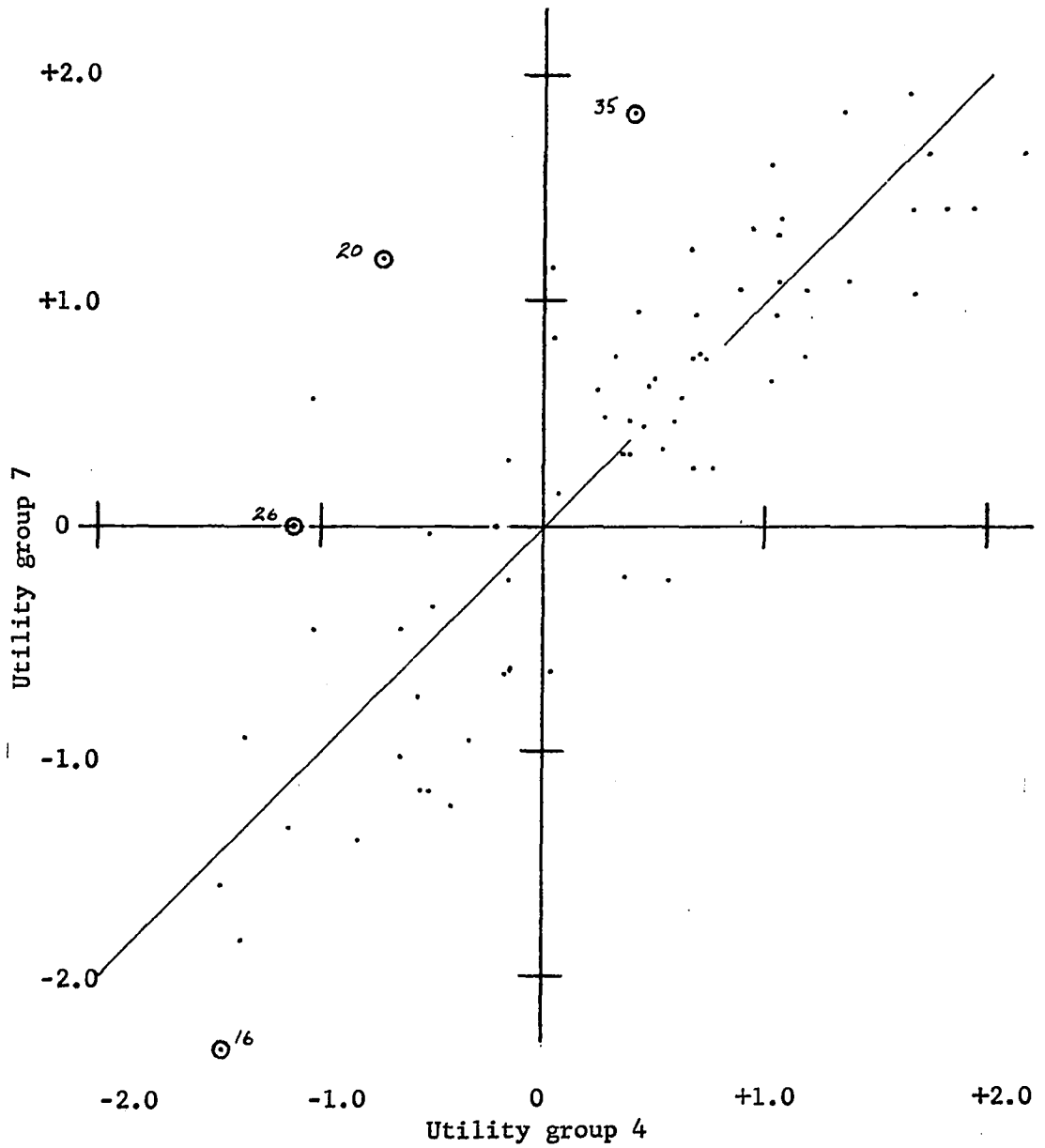


Figure 26. Mean scores by statement for utility group 4 vs utility group 7

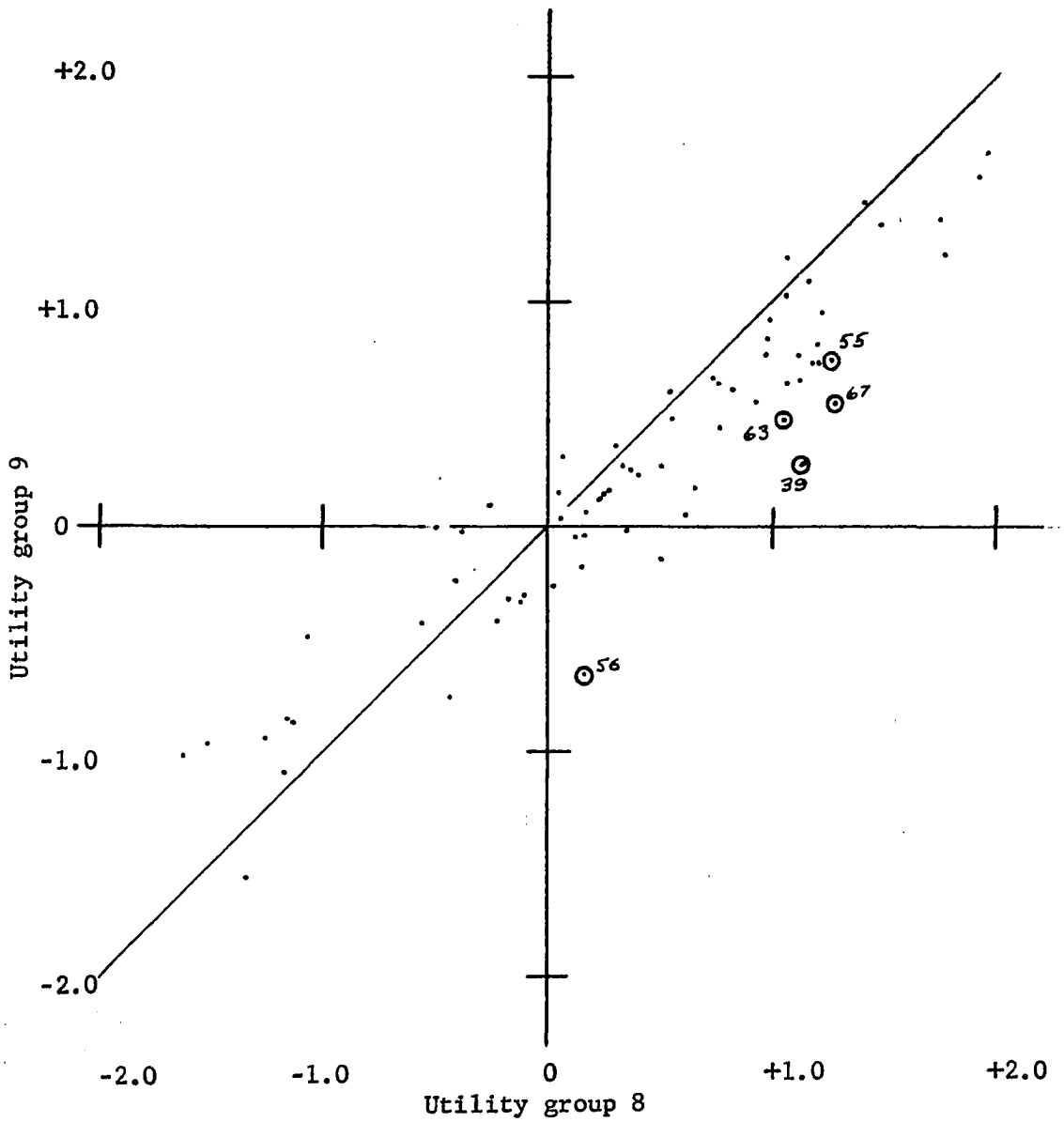


Figure 27. Mean scores by statement for utility group 8 vs utility group 9

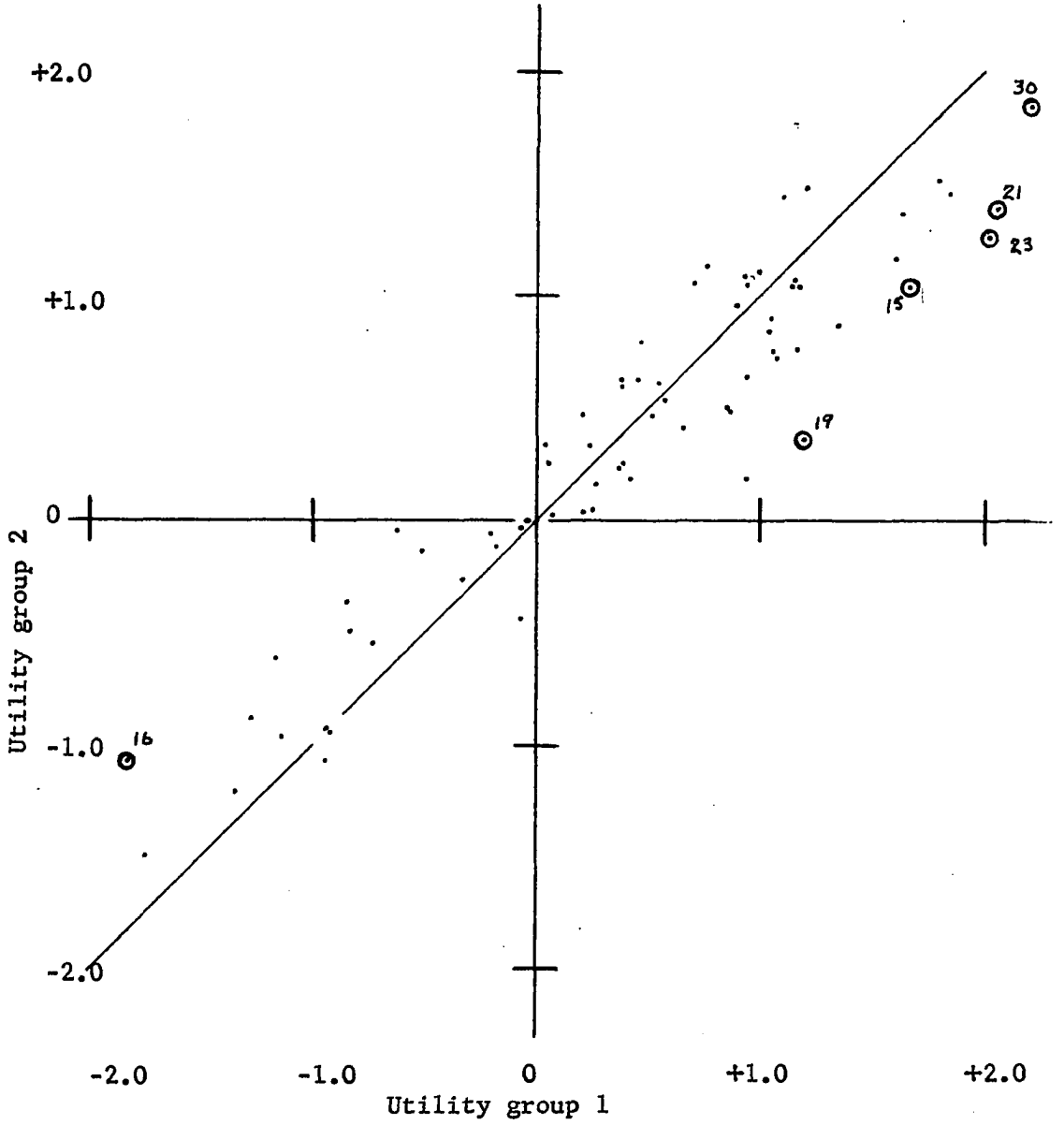


Figure 28. Mean scores by statement for utility group 1 vs utility group 2

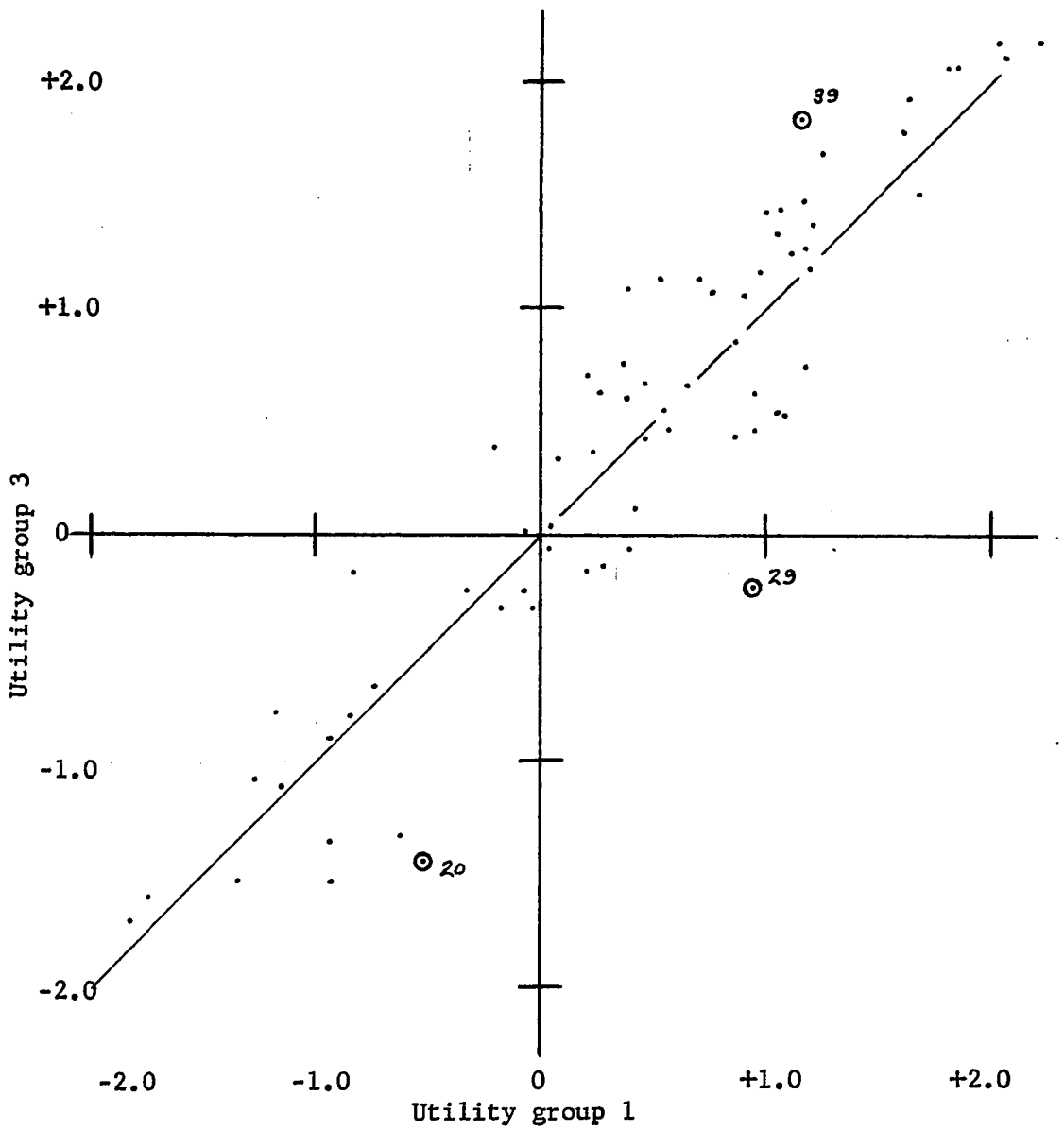


Figure 29. Mean scores by statement for utility group 1 vs utility group 3

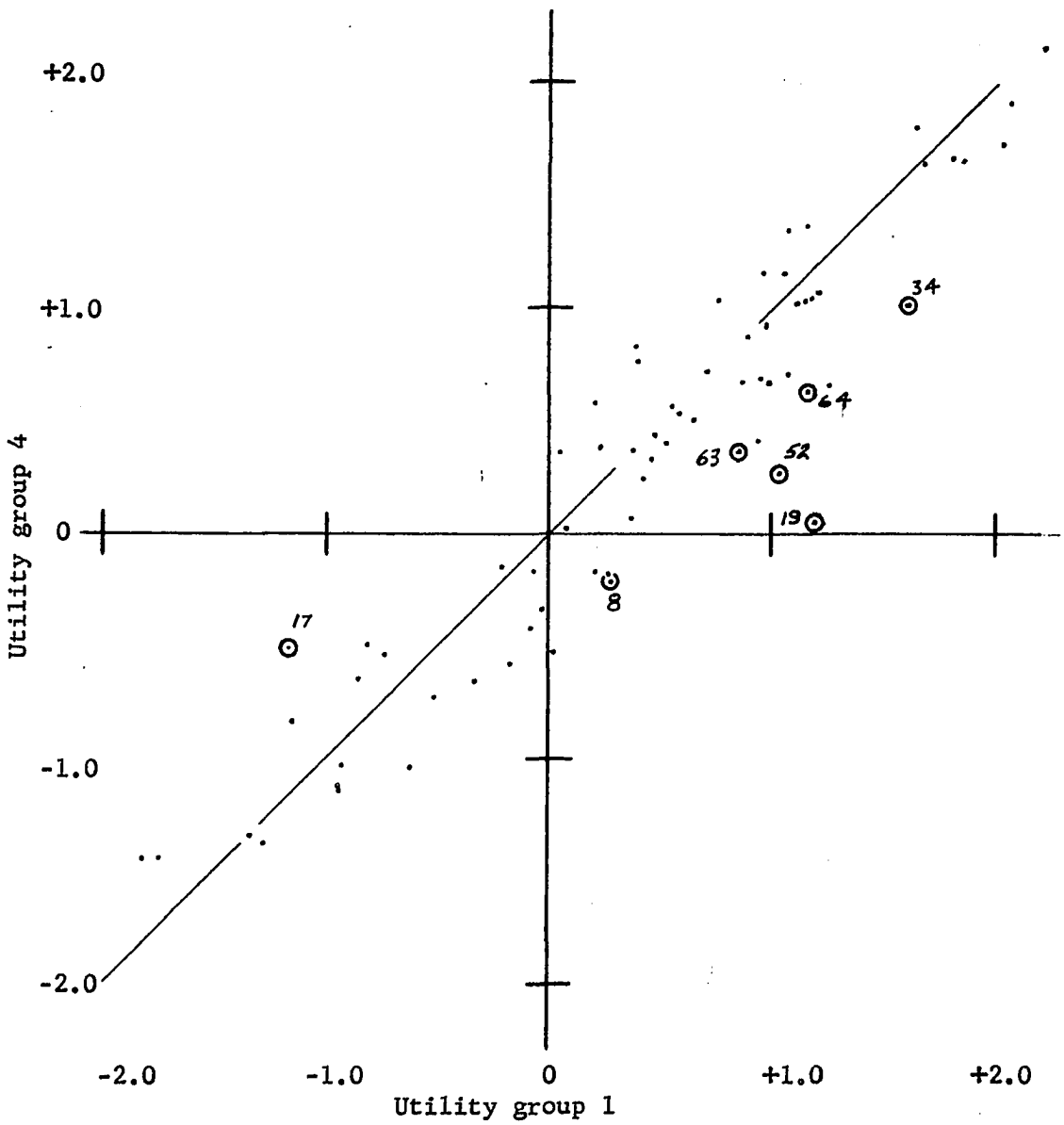


Figure 30. Mean scores by statement for utility group 1 vs utility group 4

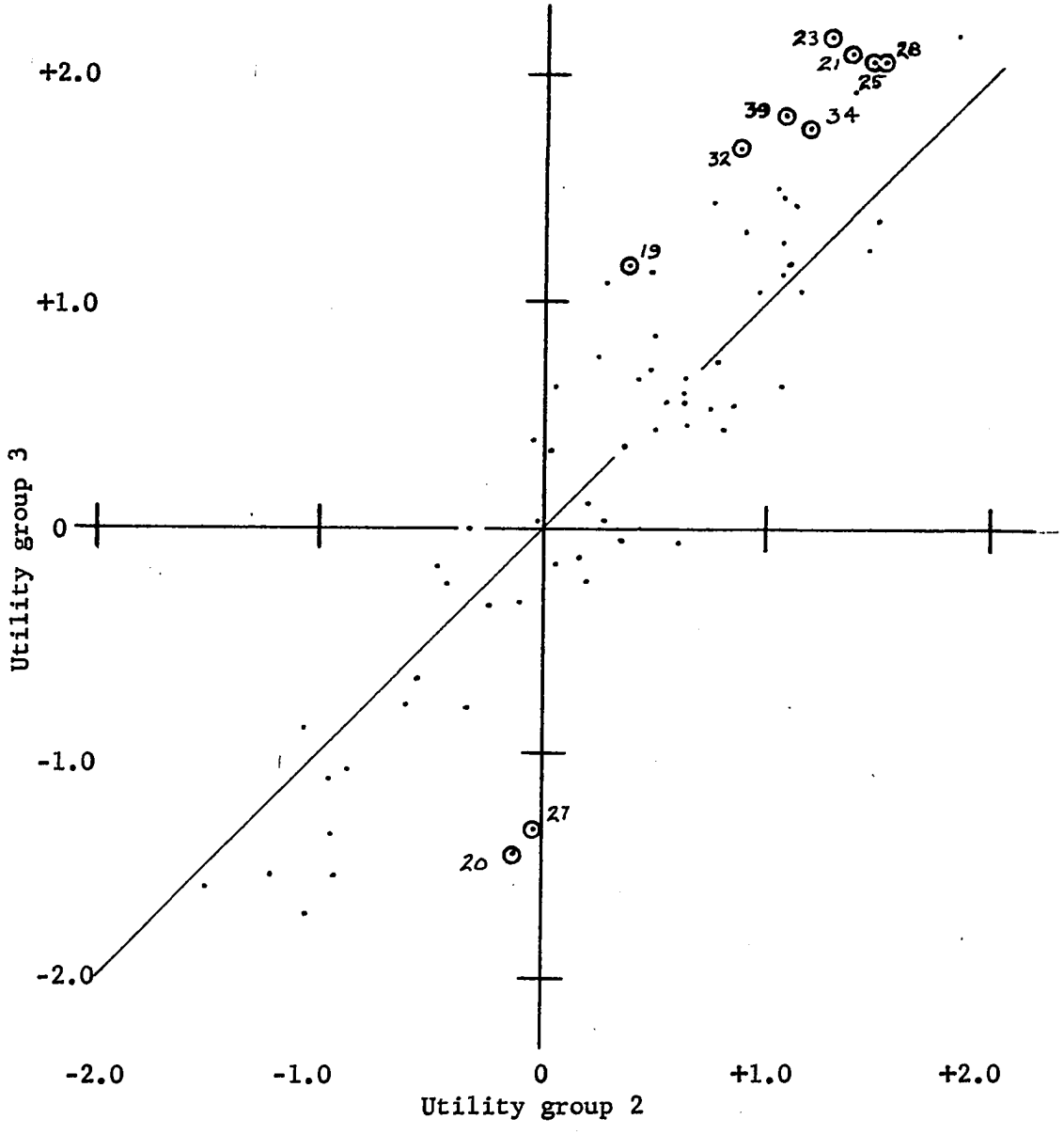


Figure 31. Mean scores by statement for utility group 2 vs utility group 3

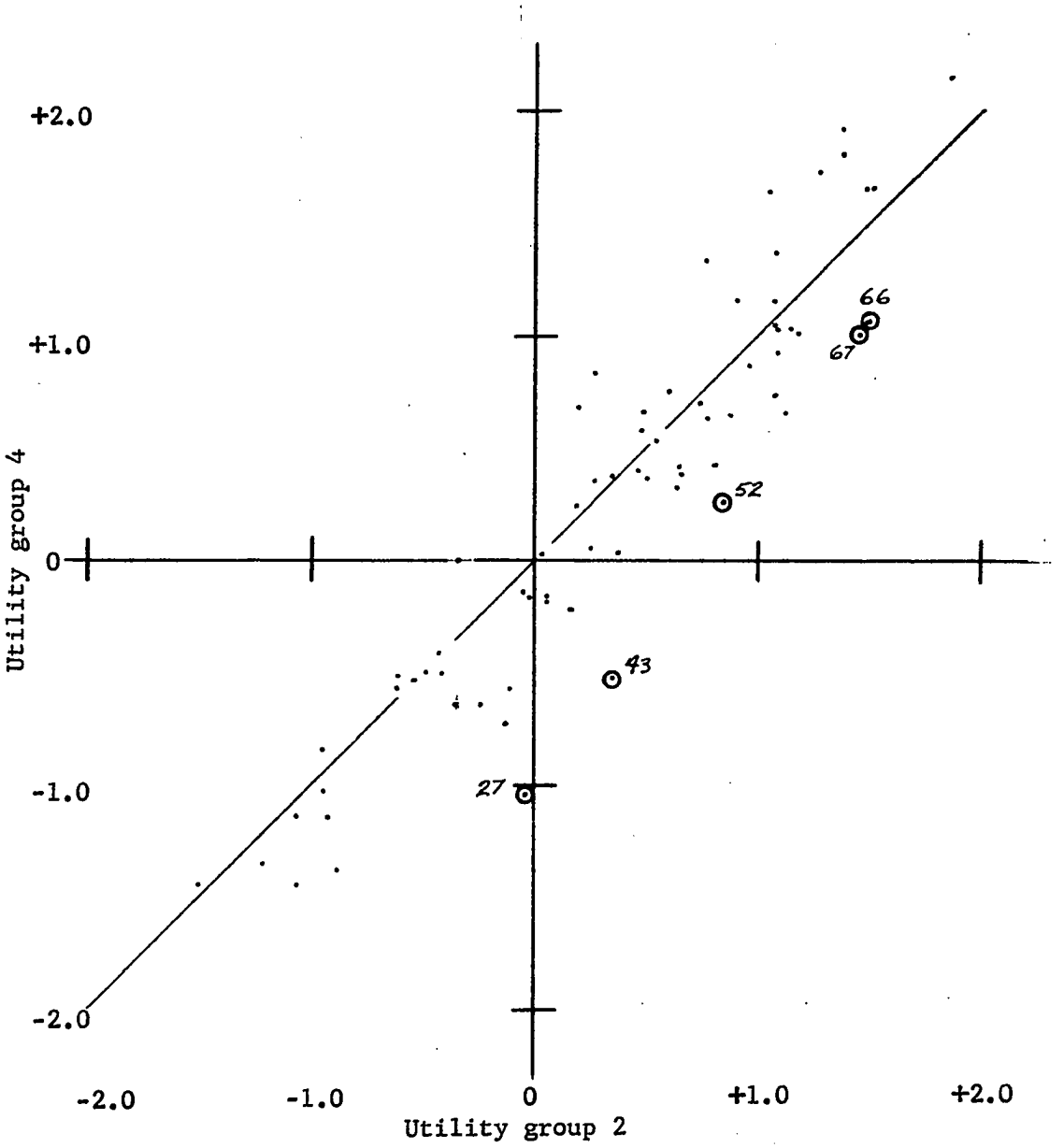


Figure 32. Mean scores by statement for utility group 2 vs utility group 4

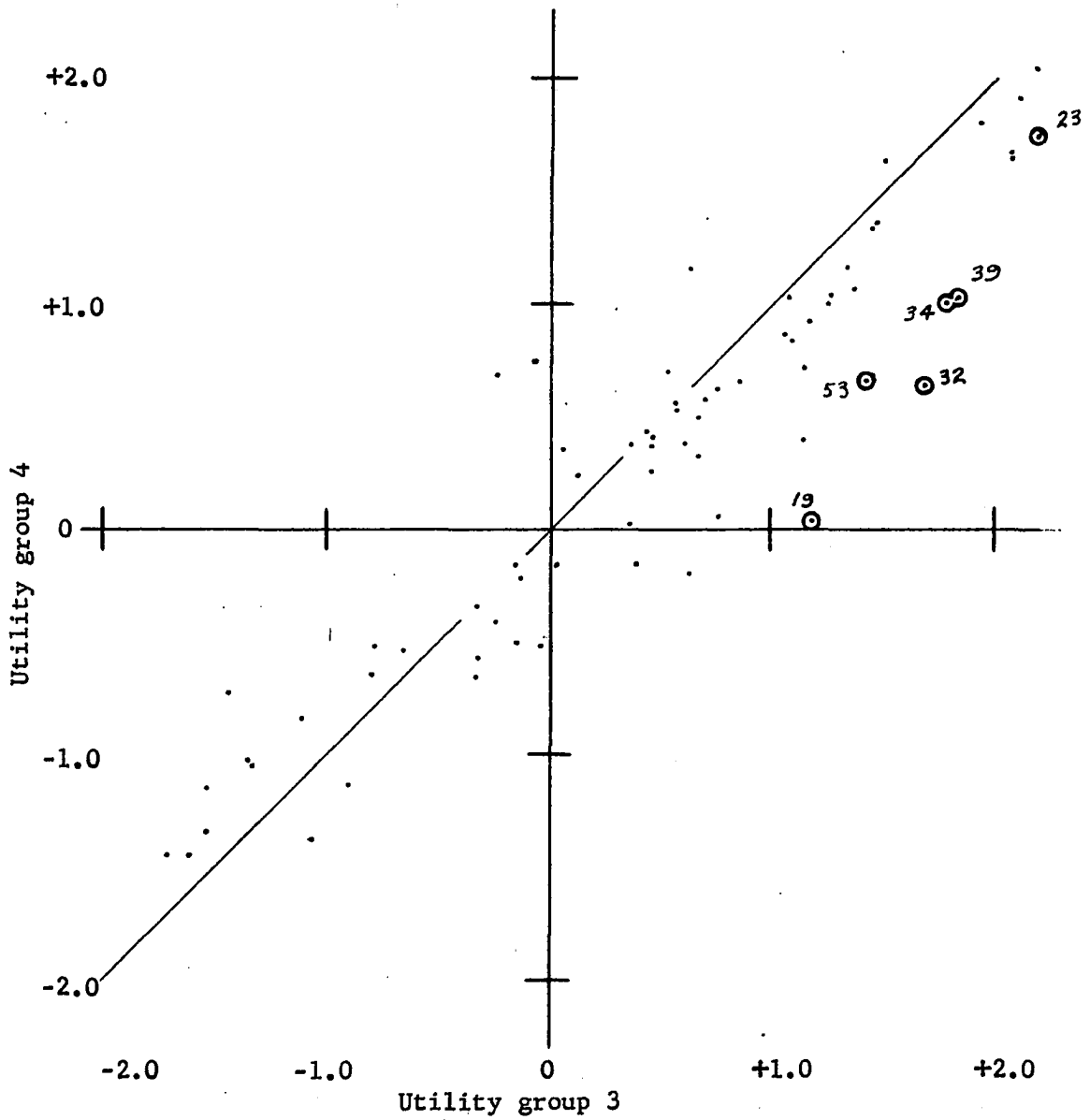


Figure 33. Mean scores by statement for utility group 3 vs utility group 4

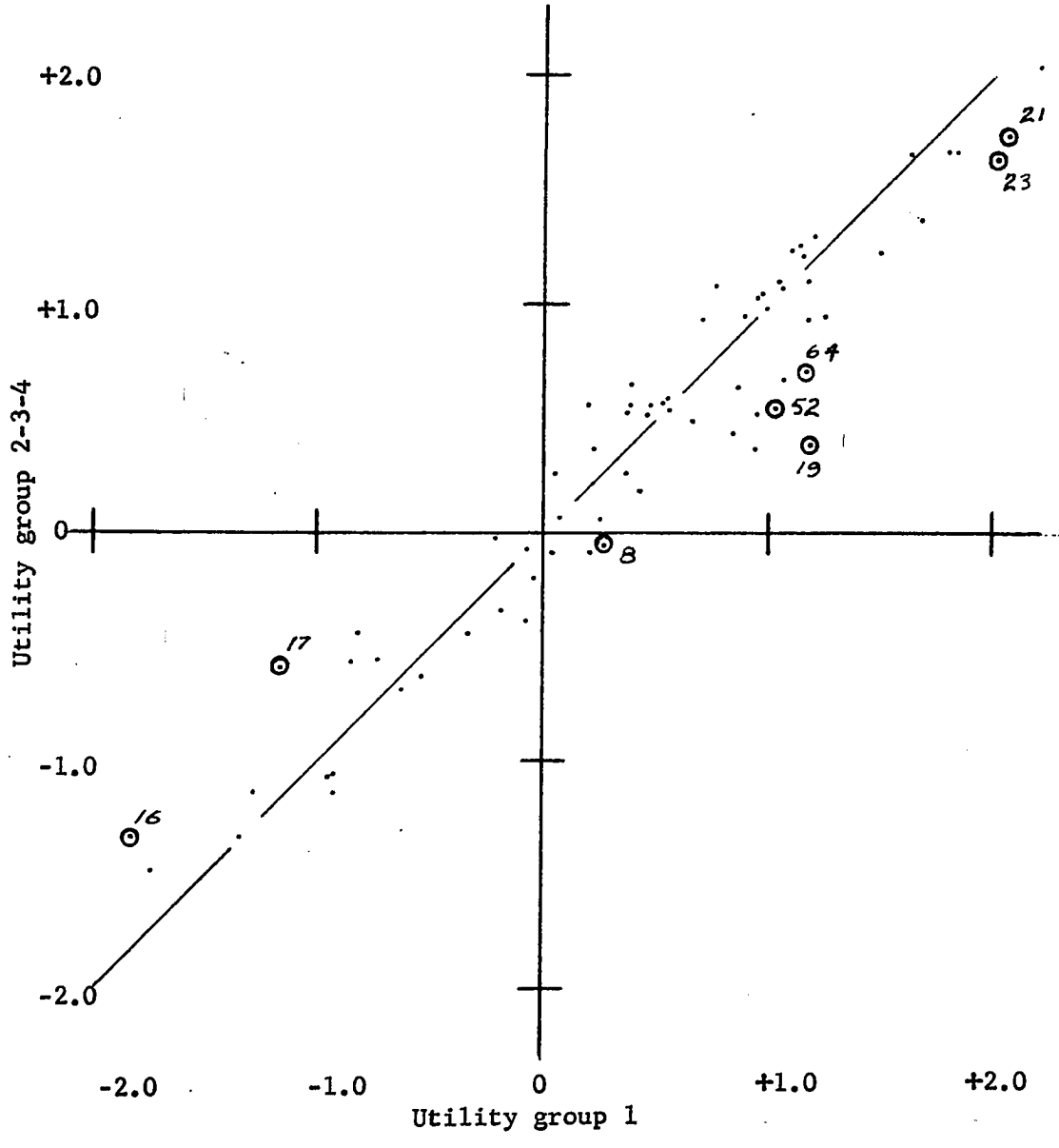


Figure 34. Mean scores by statement for utility group 1 vs utility group 2-3-4

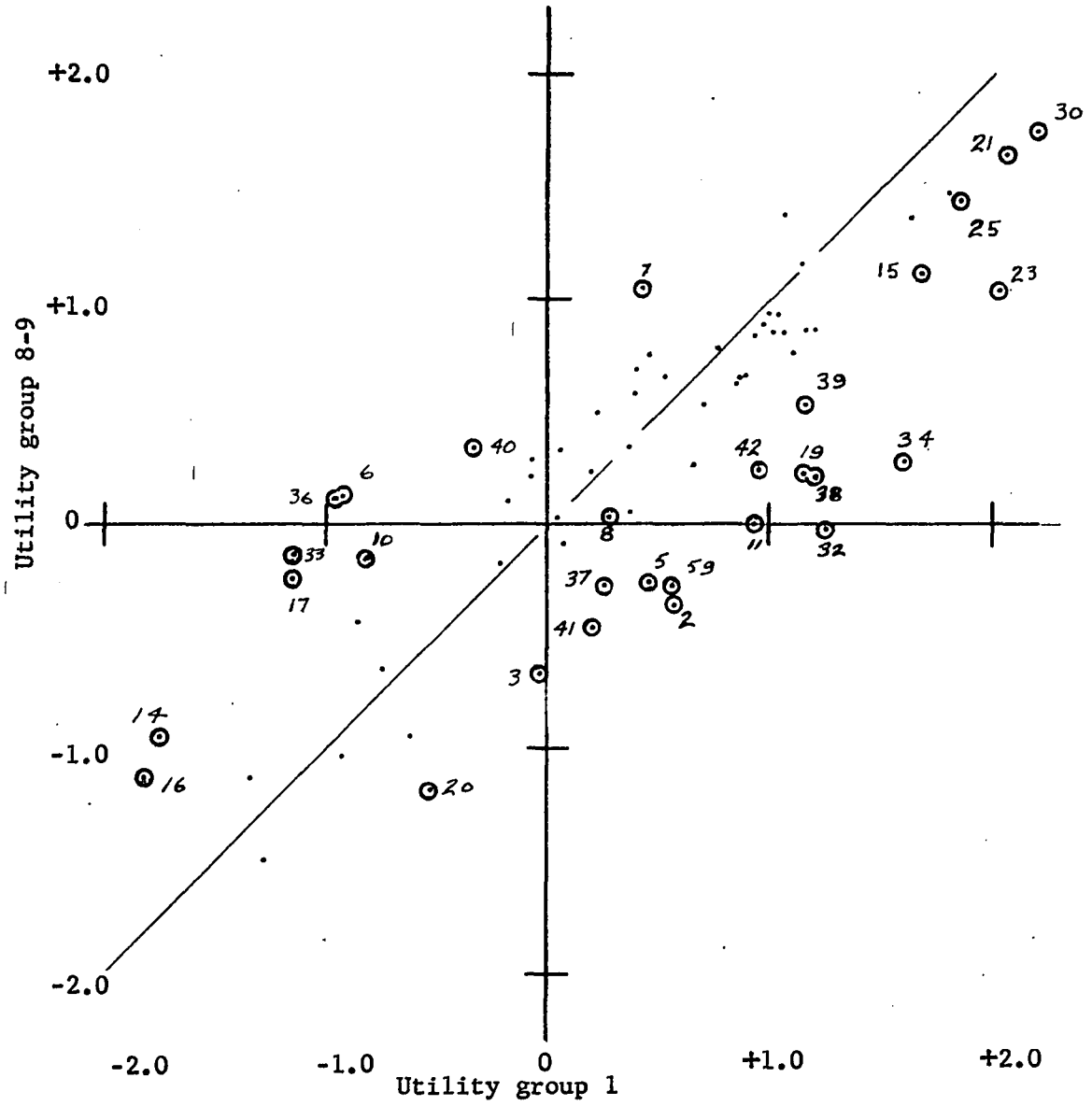


Figure 35. Mean scores by statement for utility group 1 vs utility group 8-9

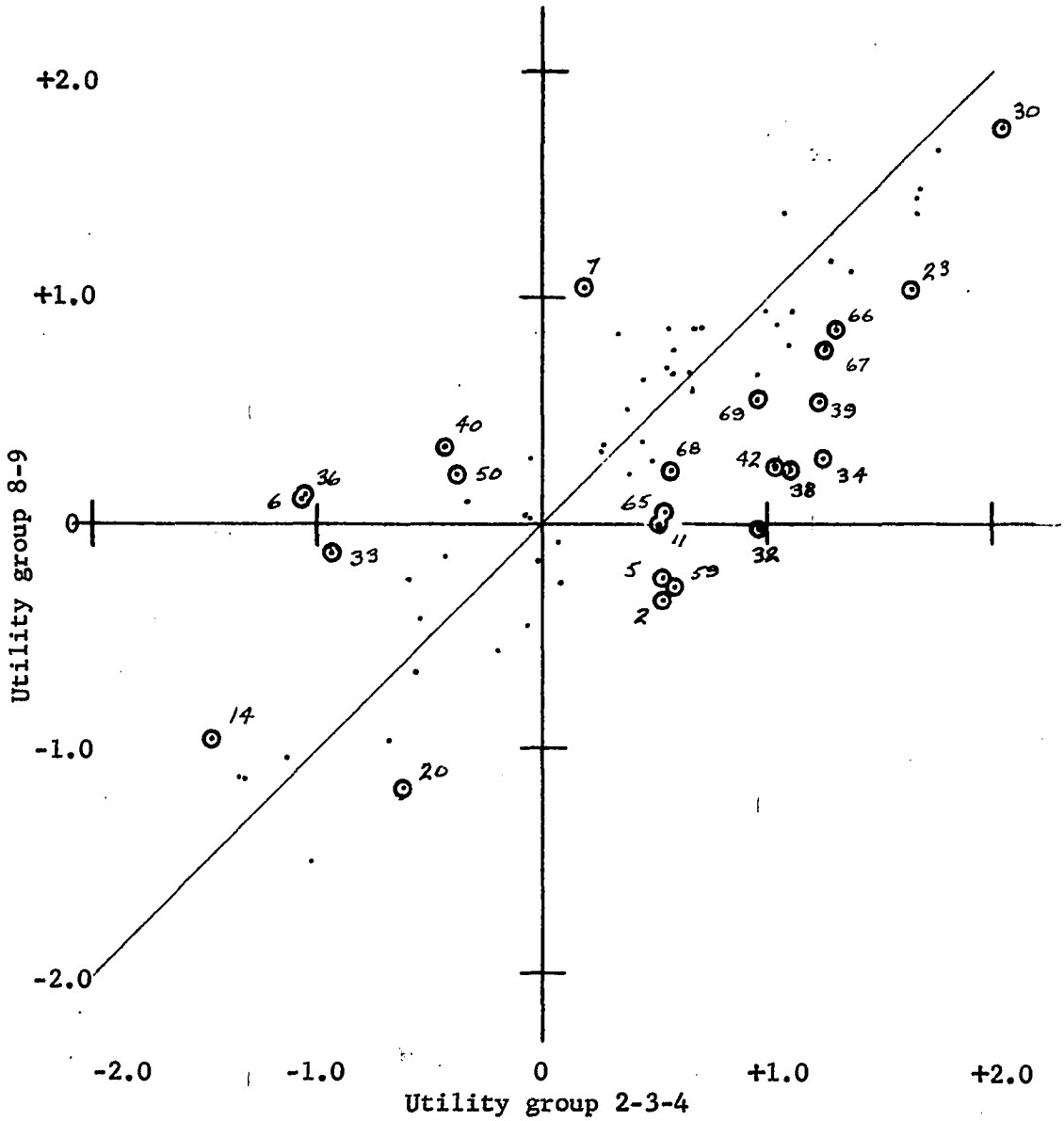


Figure 36. Mean scores by statement for utility group 2-3-4 vs utility group 8-9

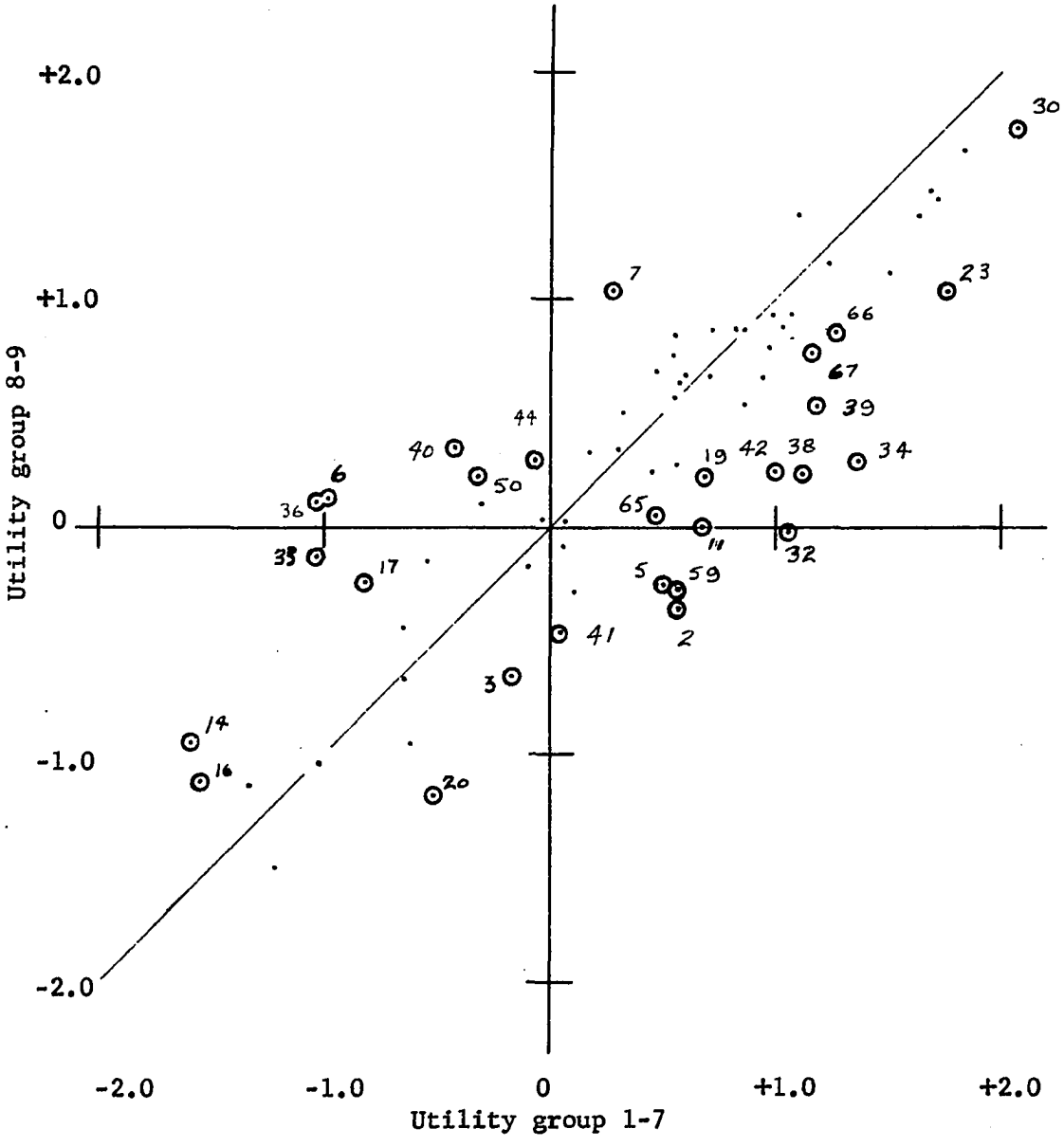


Figure 37. Mean scores by statement for utility group 1-7 vs utility group 8-9

The comparison of mean scores for each statement between utility groups 1, 2, 3, and 4 is shown in Figures 28, 29, 30, 31, 32, and 33. These comparisons indicate that utility groups 1, 2, 3, and 4 have relatively few statements with scores which are significantly different. This is an additional indication that these utility groups are in basic agreement concerning their reaction to opinions expressed by the statements on the attitude survey questionnaire. This is further substantiated by a comparison of mean scores for each statement between utility group 1 and utility group 2-3-4 as shown in Figure 34.

The comparison of mean scores for each statement between utility group 8-9 and utility groups 1, 2-3-4, and 1-7 is shown in Figures 35, 36, and 37. The relatively large number of statements showing significant differences in mean scores indicates the difference in opinions held by utility managers and commission personnel.

Analysis of an attitude group precluded the necessity of analyzing individual statements comprising the attitude groups. Those statements which were not a part of any attitude group were divided into two groups for further analysis.

Group 1 consisted of statements with significantly different mean scores between utility group 1-7 and utility group 8-9. Group 2 consisted of statements with no significant difference in mean scores between utility group 1-7 and utility group 8-9.

Analysis of statements with significantly different mean scores

Table 5 lists the statements in group 1 and the mean score for each utility group. Table 6 lists the statements in group 2 and each utility

Table 5. Mean scores significantly different by statement for utility group 1-7 vs utility group 8-9

Statement	Utility group 1-7	Utility group 8-9
2	+.54	-.36
3	+.50	-.26
6	-.99	+.12
17	-.82	-.24
20	-.51	-1.19
33	-1.03	-.12
40	-.42	+.34
44	-.08	+.29
50	-.32	+.21

groups's mean score.

The replies to statements in group 1 were analyzed individually for any additional information relevant to this study.

Statement 2 reads: I feel that current regulation fails to provide an incentive to management to improve performance but it doesn't stifle incentives either.

Statement 5 reads: I think current regulation neither condones inefficiency or encourages improved managerial performance.

Statement 6 reads: I feel management receives the maximum possible encouragement for exceptional performance under the present regulatory practices.

Each group's responses to these statements seem only to substantiate

Table 6. Mean scores lacking significant differences by statement for utility group 1-7 vs utility group 8-9

Statement	Utility group 1-7	Utility group 8-9
8	+.06	+.02
9	+.30	+.34
12	+.48	+.69
24	-.31	+.0
27	-.61	-.96
29	+.55	+.84
35	+.60	+.67
47	+.31	+.50
52	+.71	+.87
53	+.98	+.93
56	-.66	-.42
57	-.65	-.66
61	+.05	-.09
62	-.10	-.18
68	+.44	+.23

the findings from the analysis of attitude group A scores. Commissioners and commission personnel rate their current performance in influencing managerial performance significantly higher than do the utility managers.

Statement 17 reads: I guess some research should be done in this area just as a matter of policy.

This statement reflects a causal attitude toward possible research. Disagreement with this statement indicates a more positive opinion about the need for research. These scores thus indicate a moderate need for research and substantiate the findings from the analysis of attitude group B.

Statement 20 reads: I don't believe that regulation should try to influence managerial performance.

Commissioners and commission personnel by their strong disagreement with this statement indicate opinions that they should try to influence managerial performance. Utility managers also disagree with this statement but not as strongly as utility group 8-9. This response may reflect uncertainty concerning what might be considered proper influence over managerial performance by the regulatory body.

Statement 33 reads: The regulatory process would motivate exceptional managerial performance by recognizing managerial performance in a non-monetary manner only.

Utility managers disagree moderately high with this statement indicating a possible failure in non-monetary methods of motivation. This also indicates a possible need for financial incentive to bring out the best in a management group. Utility group 8-9 expresses near uncertainty regarding this statement.

Statement 40 reads: The regulatory body would motivate exceptional

> managerial performance through the rate base and the allowed expenses by disallowing those expenditures resulting from poor and insufficient managerial performance.

Utility managers reflect uncertain opinion about this statement. Commission personnel indicate only low agreement to the statement. This probably reflects the sensitivity of the subject matter, the rate base, and the indecision of both groups as to its proper use as a motivator of exceptional managerial performance.

Statements 44 and 50 related to indices of exceptional managerial performance. Extensive analysis of these responses was not considered a part of the original study.

Analysis of statements with no significant difference in mean scores

There were 15 statements to which utility group 1-7 and utility group 8-9 responded without significant differences. Each statement was reviewed to see what additional information might be suggested by agreement between the two utility groups rather than disagreement. Only those statements which provided information relevant to this study are noted.

> Statement 9 reads: I think that the regulatory body has sufficient information to enable them to evaluate managerial performance.

Both utility groups express low agreement with this statement. This would indicate that commissioners and their staffs would hesitate making such an evaluation and utility managers would not favor such an evaluation.

> Statement 27 reads: Regulation should only try to influence and improve managerial performance which is below average.

The moderate disagreement with this statement indicates opinions

which hold that regulation is not relegated to trying to influence only those utilities with below average performance.

Commission Recognition of Managerial Efficiency

A number of questions were asked each respondent on the cover sheet of the attitude survey questionnaire. Only the result of the responses to question 5 is relevant to the primary purpose of this study.

Question 5 reads: Does the commission recognize managerial efficiency when considering the adequacy of the return?

The distribution of the responses by utility managers, utility group 1-7, and commission personnel, utility group 8-9, is shown in Table 7.

Table 7. Distribution of responses to question 5 on the attitude survey questionnaire by utility group

Statement checked as reply	Percent replying	
	Utility managers	Commission personnel
1. No reply given	14.5	11.8
2. No, the commission does not recognize managerial efficiency	33.0	19.6
3. Yes, and they allow an increased rate of return for efficient management	6.0	3.9
4. Yes, and they penalize inefficient management with a reduced rate of return	1.7	3.9
5. Yes, but it does not influence the rate of return	25.0	33.3
6. Yes, and they may refuse a rate increase for inefficient management	8.5	5.9
7. Yes, and they reward management in some manner other than by an increased rate of return	2.5	11.8
8. Other than above	9.3	9.8

Better than 50% of all respondents felt the commission either did not recognize managerial efficiency, or, if they did, they did not let it influence the allowed rate of return. Only 6% of the utility managers and 3.9% of the commission personnel felt an increased rate of return was allowed for efficient management.

The above findings and results were weighed by the investigator in reaching conclusions based on this study. A discussion of the results and conclusions are presented in the final section.

DISCUSSION AND CONCLUSIONS

This discussion considers the findings of this research study as viewed by the investigator. Consideration is given to the relative low return of completed survey questionnaires; to the acceptance or rejection of the primary and secondary hypotheses and their implications; and to the information provided regarding the three questions presented in the introduction. Following a review of the basic conclusions reached in this study, a brief discussion identifies the subject matter requiring future research.

Low Returns

A high return is always desirable when sampling is used to survey a population, but there may also be significance in the possible reasons for a low return. Responses to the initial letter introducing this research topic, as well as subsequent letters, gave indications of interest and a desire to be of assistance. The low return of completed survey questionnaires may have been due to a number of reasons.

First: This study and the initial mailing of the questionnaire was made during the summer months. It is possible that vacations caused some individuals to delay, and to later decide against completing the attitude survey questionnaire.

Second: Certain states are still without state regulation over electric, gas or telephone utilities. The commission personnel and the utility managers in these states may have felt their reply was unimportant.

Third: The survey questionnaire may have created confusion for some

individuals resulting in their failing to reply. The review of literature did not reveal any attitude study within the electric, gas, or telephone industries, or within state commissions which utilized research methods similar to those used in this study. A few of the respondents expressed difficulties in replying to the questionnaire. This seems to indicate that some individuals may have found confusing the form of the survey questionnaire and the nature of the response required.

A respondent's confusion may have been due to his failure to read the instructions and directions carefully, or due to difficulties in communicating directions and instructions by letter.

Fourth: A failure to reply may also have been due to the individual's lack of interest in the subject matter under study and/or his unwillingness to assist in such a study. Utility managers and commissioner personnel are probably subjected to numerous surveys and requests for information. One more request may not have received very close attention and may also have been discarded unread.

Population sampled

Although any one of the above reasons may explain the relatively low return experienced in this survey, it is believed that only the last possibility might influence the conclusions reached from this study.

The population to be sampled was originally intended to be all electric, gas, and telephone utility managers and commissioners and commission personnel. It may be that a sub-population was actually sampled which included those individuals which held some interest in this study or at least a willingness to be of some assistance.

It has been concluded that those who replied initially and those who replied after receiving the follow-up letter were not a significantly different population. The subpopulation actually sampled did not change in composition after mailing the follow-up letter. This adds validity to the findings and results for it implies that further returns would not necessarily differ with the returns actually actually received. This also substantiates the belief that individuals who failed to reply for one of the first three reasons cited above would not necessarily be different from the actual respondents.

It is possible, however, that a failure to reply because of the fourth reason may indicate a second subpopulation. This second subpopulation might be identified as utility managers and commission personnel who seem to have no interest in research concerning regulation's effect upon managerial performance, or at least they have no interest in assisting with such research. The ideas and opinions held by this second subpopulation may differ with the ideas and opinions held and expressed by the individuals responding to the attitude survey questionnaire.

A lack of interest in this subject area may be symptomatic of an inefficiently managed utility or a regulatory body which may be failing in one of its regulatory duties. This is speculation concerning an unknown group, but indicates that further research and study is needed into the attitudes and opinions of this hypothetical group as compared to the respondents to this study.

Primary Hypotheses

The conclusions reached from this study can be attributed only to the group actually sampled and are based upon the mean scores of respondents. This study was primarily interested in testing three hypotheses offered at the close of the introduction.

Hypothesis I

Hypothesis I: Utility managers and commission personnel, as groups, have the opinion that regulation currently assures only average performance and to a degree penalizes efficient management.

To test this hypothesis, attitude group A was selected as a measure of attitude variable I: To what degree does regulation currently influence managerial performance?

Based on this study, the above hypothesis is rejected. This study indicated that utility managers and commission personnel both hold opinions that regulation encourages above average performance. Commission personnel feel their current influence is moderate to highly positive in encouraging exceptional managerial performance. Utility managers recognize a positive influence, but seem to hold opinions that this influence is only low to moderately positive.

Both groups indicate by their responses to statement 6 on the attitude survey questionnaire that regulation is not providing the maximum possible encouragement to management.

This difference in opinions held by utility managers and commission personnel is understandable. The commission personnel naturally would hold a higher opinion about the results of their efforts than would

utility managers. The fact that both groups recognize a difference between current influence and the maximum possible seems to be a realistic judgment on the part of both groups. It also is indicative of honest and sincere responses adding reliability to the findings.

These findings refute arguments that regulation encourages inefficiency on the part of utility managers. Certainly those responding to this survey did not, as a group, feel this was true.

Hypothesis II

Hypothesis II: Utility managers and commission personnel, as groups, hold the opinion that it is possible to obtain a measure of managerial performance.

To test this hypothesis, attitude group B was selected as a measure of attitude variable II: To what degree is it possible to measure managerial performance?

Based on the responses received in this study, this hypothesis is accepted.

Research on methods for motivating management will need to consider the possibility of differentiating various degrees of managerial performance.

Utility managers have long been concerned with methods of measuring and evaluating past performance. They have at their disposal considerable cost data for use in measuring their performance, but they currently lack important noncost data which may also be necessary.

This concern for managerial performance seems to explain their moderate to high opinions regarding the possibility of measuring managerial performance.

Both utility managers and commission personnel acknowledge that the commissions now lack sufficient information to enable them to evaluate managerial performance.

The type of reports currently required by commissions probably do not contain the information necessary for a decision regarding a management's relative performance. It, therefore, does not seem unusual for commission personnel to hold low opinions regarding the possibility of measuring managerial performance.

At this time, it is also speculative regarding what information is necessary for effective measurement of managerial performance. It is quite probable that the utilities themselves do not currently have available information which may be considered important. This is particularly true concerning noncost data.

Hypothesis III

Hypothesis III: Utility managers and commission personnel, as groups, have the opinion that research is needed on a method or methods for motivating management.

To test this hypothesis, attitude group C was selected as a measure of attitude variable III: To what degree is research needed on a method or methods for providing incentives to utilities through regulation?

Based on the responses received in this study this hypothesis is accepted.

Utility managers indicated a high degree of need for research while commission personnel indicated a moderate degree of need. These opinions seem related to the opinions indicated by statement 6, which recognized the possibility for greater regulatory influence over managerial perform-

ance. Having recognized this possibility for greater influence, they also recognize the need for research on methods providing for this influence.

The responses by utility managers concerning research may have been influenced by their desire for individual company recognition based on their managerial performance. Utility managers would not feel the need for research unless they felt there was a possibility of receiving some reward for exceptional managerial performance.

Hypothesis IV

A hypothesis of secondary importance deserves a brief comment at this time.

> Hypothesis IV: Telephone managers, as a group, have opinions which differ from those held by gas and electric utility managers. These opinions express a more positive agreement with hypotheses I, II, and III.

Based on the analysis of attitude group A, B, and C, this hypothesis is rejected. As a group, telephone managers respond significantly differently only with respect to attitude group C. Telephone managers expressed highly positive opinions regarding the possibility of measuring managerial performance. These opinions were significantly more positive than those expressed by the gas and electric utility managers.

Training and measurement are related. Effective training programs require some means of measuring results. As a group, the telephone industry probably places more emphasis on managerial training and, therefore, has more confidence in its ability to measure managerial performance. This is speculative and requires confirmation through additional analysis.

The telephone utilities place considerable emphasis on performance and progress as evidenced by the publication, "Profit, Performance and Progress" (2). This emphasis would give them additional confidence in their ability to measure performance.

Related Questions

This study also sought information about attitudes and opinions relating to three questions presented at the close of the introduction. Each of the questions is discussed individually.

Question 1

Question 1: What effect should regulation have on managerial performance?

Attitude group D was selected as a measure of attitude variable IV: To what degree should regulation attempt to motivate exceptional managerial performance?

Both utility managers and commission personnel were in basic high positive agreement with opinions that regulation should attempt to motivate exceptional managerial performance. Utility managers, however, had higher positive opinions than commission personnel.

It must be recognized that no indication was given concerning how such motivation should be given. Utility managers would in all probability accept only motivation which maintained a "hands off" approach by the regulatory body, leaving management free to operate as they choose. Commissions, on the other hand, might feel that extensive control over managerial actions would be the proper means of providing motivation for

exceptional performance.

Both groups recognized the power of public opinion in motivating better management, but, as was recognized earlier, any method of motivation would in all probability have to include a financial incentive.

Question 2

Question 2: What action by regulatory bodies would motivate exceptional managerial performance?

Attitude group E was selected as a measure of attitude variable V: To what degree is the rate of return important as a motivator of exceptional managerial performance? The attitude group originally selected as a measure of opinions about this question included statements about non-financial motivators and the rate base as a motivator, as well as statements about the rate of return as a motivator. Only those statements relating to the rate of return had relatively high intercorrelation and were, therefore, selected as a measurement of the importance of the rate of return as a motivator.

Considerable disagreement is noted between utility managers and commission personnel with regard to this question. Utility managers hold a high regard for the influence of the rate of return as a motivator of exceptional managerial performance. This again seems to reflect opinions that proper motivation of exceptional managerial performance will come only from a prospective increase in the rate of return.

Commission personnel, however, are uncertain in their opinions about the influence of the rate of return on managerial performance. This may be partially due to their lack of positive opinions concerning their

ability to measure managerial performance, and to the lack of a well defined plan for allowing an increased rate of return to those utilities which are exceptionally managed.

The importance of the rate of return as a motivator differs among utility groups as shown in Figure 16. This indicates a relative disagreement among utility managers about the true influence of the rate of return on managerial performance.

Question 3

Question 3: What performance is an index of exceptional managerial performance?

Each of the original statements in this section of the attitude survey questionnaire reflected an indicator of exceptional managerial performance. Two groups of statements were found to have relatively high intercorrelation and each was identified as an attitude group.

Attitude group F was selected as a measure of attitude variable VI: To what degree is profit a measure of exceptional managerial performance?

Attitude group G was selected as a measure of attitude variable VII: To what degree is the quality of a utility's interpersonal activities an indicator of exceptional managerial performance?

Utility managers may feel that the rate of return will motivate improved managerial performance, but they recognize it as only a weak measure of managerial performance. Commission personnel, however, do not recognize a positive correlation between profit and managerial performance.

This conclusion is reinforced by the replies to question 5 on the cover sheet of the attitude survey questionnaire.

Better than 50% of all respondents felt the commissions failed to recognize managerial performance, or if they did, they did not do so through the rate of return. This being true, and considering that the regulatory process supposedly allows a utility a fair return on its investment, profit would not be related to the quality of a utility's management.

Hypothesis V

It is interesting to note that the statements in attitude group G related to a utility's interpersonal activities. A large proportion of the statements in attitude group G dealt with customer relations, customer services, personnel relations, and supervision. This attitude group therefore provided information regarding another hypothesis of secondary importance.

> Hypothesis V: Utility managers consider exceptional performance in areas related to personnel supervision as indicative of exceptional managerial performance.

While these replies were not intended for extensive analysis at this time, they did indicate the lack of agreement among utility groups upon one or a few strong indicators of managerial performance. They also provided insight into the opinions of both utility managers and commission personnel regarding the importance of the customer and the employee when determining the quality of a utility's management.

This should not be unexpected, for it is only through cooperative group action that final results are achieved. The exceptionally managed utilities will achieve such a position only through cooperation and efficient performance of every employee in the company. A utility is a

service industry, and its performance is, therefore, related to the customers' reactions on how satisfactory the service has been.

It is interesting to note that the three statements in attitude group G which received the highest scores by utility managers were:

Statement 66: A high quality of supervision indicates exceptional management.

Mean score for utility group 1-7 +1.27

Statement 67: Highly dedicated employees indicate exceptional management.

Mean score for utility group 1-7 +1.16

Statement 46: Excellent customer relations indicate exceptional management.

Mean score for utility group 1-7 +1.06

These responses lead to the acceptance of hypothesis V.

Commission personnel scored statement 46 and statement 53 highest with mean scores of +.93.

Statement 53: Ready financing available at low interest rates indicates exceptional management.

Commission personnel recognize the importance of the employee by scoring statement 55 second to the highest, with a mean score of +.89.

Statement 55: High employee morale indicates exceptional management.

Certainly continued research is needed on indices of exceptional managerial performance, but concentration in areas relating to the employee and the customer seems evident.

Basic Conclusions

The conclusions reached by this investigator based upon the analysis of responses to the attitude survey questionnaire can be summarized by

the following statements:

1. Current regulation provides a positive influence upon managerial performance.

2. The practice of regulation does not provide the maximum possible encouragement to management.

3. Utility managers have moderate confidence in the possibility of measuring managerial performance but commission personnel express low confidence concerning this possibility.

4. Research is needed on a method or methods for motivating management.

5. Regulation should attempt to motivate exceptional managerial performance.

6. Utility managers have a high regard for the rate of return as a motivator of exceptional management, but commission personnel are more uncertain regarding its importance.

Considerations for the Future

Considering the overall results of this study, what does it suggest for the future?

While utility managers and commission personnel give indications of having different opinions, their differences are not as great as would be expected after a review of the literature. This should encourage and be a basis for improved cooperation in these areas of mutual interest.

This study also highlights the need for continued research in a number of directions.

First: The lack of a high response to the attitude survey questionnaire suggests research into the reason for a lack of interest, if such was the case, or the reasons for failure to cooperate in research which, from all previous indications, represented an area of intense interest

for utility managers and commission personnel.

Second: This study found that the population responding to the attitude survey questionnaire felt research on a method or methods for motivating management was necessary. Research in this area must consider seriously a financial motivator, probably related to the rate of return. Use of such a plan will in all probability require a measure of managerial performance for proper implementation.

Third: Extensive research is, therefore, needed into the different possible means for measuring, if only in a relative manner, the past performance of a utility's management. It must be possible to compare different managements and determine their relative proficiency. In this respect it may be necessary to develop a plan for management evaluation along lines similar to those of job evaluation. In order to make such an evaluation acceptable to both commission and utility managers, it may be necessary to have such an evaluation performed by a group of knowledgeable individuals outside both the affected utility and the controlling commission.

As research in these three areas progresses, the possible benefits from each proposed plan must be compared with the costs involved in implementing such a program. It may well be that our present system, while leaving room for improvement, is still the most efficient from a total cost viewpoint.

The goal of such research must always be to provide improved utility regulation at relatively low costs while providing optimum benefits to investors, customers, employees, and managers.

BIBLIOGRAPHY

1. Adams, Walter and Gray, Horace M. Monoploy in America. New York, N. Y., The Macmillan Company. 1955.

2. American Telephone and Telegraph Co. Profit, performance and progress--a study of regulated and non-regulated industry for Bell system management training use. New York, N. Y., Author. December 1961.

3. Anderson, Ronald A. Government and business. Chicago, Ill., South-Western Publishing Company. 1960.

4. Appley, Lawrence A. The management evolution. New York, N. Y., American Management Association. 1963.

5. Argyris, Chris. Integrating the individual and the organization. New York, N. Y., John Wiley and Sons, Inc. 1964.

6. Arthur Andersen and Co. Return allowed in public utility rate cases. Volume I. Chicago, Ill., Author. 1915-1954.

7. Bain, Joe S. Industrial organization. New York, N. Y., John Wiley and Sons, Inc. 1959.

8. Bain, Joe S. Price Theory. New York, N. Y., Holt, Rinehart and Winston. 1952.

9. Barnes, Irston R. The economics of public utility regulation. New York, N. Y., F. S. Crofts and Company. 1942.

10. Barnes, Irston R. Public utility control in Massachusetts. New Haven, Conn., Yale University Press. 1930.

11. Bauer, John. Effective regulation of public utilities. New York, N. Y., The Macmillan Company. 1925.

12. Bauer, John. Transforming public utility regulation. New York, N. Y., Harper and Brothers Publishers. 1950.

13. Bauer, John and Gold, Nathaniel. Public utility valuation for purposes of rate control. New York, N. Y., The Macmillan Company. 1934.

14. Bernstein, E. M. Public utility rate making. Chapel Hill, N. C., The University of North Carolina Press. 1937.

15. Bernstein, Marver H. Regulating business by independent commission. Princeton, N. J., Princeton University Press. 1955.

16. Besse, Ralph M. Seventy-five years of public utility regulation in a competitive society. Public Utilities Fortnightly 52, No. 8: 554-568. October 8, 1953.

17. Bickley, John H. The relation between fair return and the rate base. Public Utilities Fortnightly 66, No. 3: 145-158. August 4, 1960.

18. Bluefield Water Works and Improvement Company v. Public Service Commission of the State of West Virginia et al. United States Reports 262: 679-695. 1923.

19. Bonbright, James C. The ill-defined meaning of a fair value rate base. Iowa State Conference on Public Utility Valuation and The Rate Making Process Proceedings 1962: 39-60. 1962.

20. Bonbright, James C. Principles of public utility rates. New York, N. Y., Columbia University Press. 1961.

21. Bryant, J. M. and Herrmann, R. R. Elements of utility rate determination. New York, N. Y., McGraw-Hill Book Company, Inc. 1940.

22. Bussing, Irvin. Public utility regulation and the so-called sliding scale. New York, N. Y., Columbia University Press. 1936.

23. Cabot, Philip and Malott, Deane W. Problems in public utility management. Chicago, Ill., A. W. Shaw Company. 1927.

24. California Public Utilities Commission Re Citizens Utilities Company of California. Public Utilities Reports 3d 1: 244-249. 1954.

25. Childs, John F. Investor's view of management and regulation. Public Utilities Fortnightly 58, No. 1: 1-16. July 5, 1956.

26. Chutter, Frank D. An institutional investor in public utility equities looks at regulation. Iowa State Conference on Public Utility Valuation and The Rate Making Process Proceedings 1963: 323-341. 1963.

27. Colter, Cyrus J. Comments by regulatory commissioner on utility management. Land Economics 35, No. 1: 75-77. February 1959.

28. Connecticut Public Utilities Commission Re New Haven Water Company. Public Utilities Reports 3d 2: 452-464. 1954

29. Cook, James W. The impact of regulated industry on the national economy. Public Utilities Fortnightly 66, No. 9: 605-608. October 27, 1960.

30. Croly, Herbert. The promise of American life. New York, N. Y., The Macmillan Company. 1910.

31. Dimock, Marshall E. Administrative vitality. New York, N. Y., Harper and Brothers. 1959.

32. District of Columbia Public Utilities Commission Re D. C. Transit System, Inc. Public Utilities Reports 3d 25: 371-381. 1958.

33. Ely, Owen. 'Automatic' utility rate plans prove impracticable. Public Utility Fortnightly 45, No. 7: 441-442. March 30, 1950.

34. Fair rates of return and inflation. Public Utilities Fortnightly 64, No. 5: 373-375. August 27, 1959.

35. Federal Power Commission et al. v. Hope Natural Gas Company. United States Reports 320: 591-660. 1944.

36. Fleischmann, Edwin. Thoughts in the dark. Public Utilities Fortnightly 73, No. 2: 50-53. January 16, 1964.

37. Florida Railroad and Public Utilities Commission Re Florida Telephone Corporation. Public Utilities Reports 3d 1: 18-27. 1954.

38. Florida Railroad and Public Utilities Commission Re General Telephone Company of Florida. Public Utilities Reports 3d. 44: 247-258. 1962.

39. Florida Railroad and Public Utilities Commission Re St. Joseph Telephone and Telegraph Company. Public Utilities Reports 3d 43: 426-430. 1962.

40. Garland, J. V. and Phillips, Charles F. The crisis in the electric utilities. New York, N. Y., H. W. Wilson Co. 1936.

41. Glaeser, Martin G. Outlines of public utility economics. New York, N. Y., The Macmillan Company. 1927.

42. Glaeser, Martin G. Public utilities in American capitalism. New York, N. Y., The Macmillan Company. 1957.

43. Gray, John H. and Levin, Jack. The valuation and regulation of public utilities. New York, N. Y., Harper and Brothers Publishers. 1933.

44. Greenwood, Ernest. You, utilities and the government. New York, N. Y., D. Appleton-Century Company. 1935.

45. Grunsky, Carl Ewald. Valuation, depreciation and the rate-base. New York, N. Y., John Wiley and Sons, Inc. 1917.

46. Guercken, C. P. Efficiency versus earnings in the electric industry. Public Utilities Fortnightly 54, No. 6: 293-306. September 16, 1954.

47. Hammel, Lloyd G. Is regulation keeping up with the times? Public Utilities Fortnightly 68, No. 12: 893-901. December 7, 1961.

48. Heilbroner, Robert L. The making of economic society. Englewood Cliffs, N. J., Prentice-Hall, Inc. 1962.

49. Heilbroner, Robert L. The worldly philosophers. New York, N. Y., Simon and Schuster. 1961.

50. Higher Earnings for Utilities? [Report of address by Sinclair Weeks.] Public Utilities Fortnightly 56, No. 1: 35-36. July 7, 1955.

51. Houlihan, D. F. Recent significant trends in public utility rate determination. Public Utilities Fortnightly 52, No. 9: 650-660. October 22, 1953.

52. Howe, Williams H. Further aspects of fair rate of return. Public Utilities Fortnightly 60, No. 1: 1-9. July 4, 1957.

53. Hungerford, Edward. The story of public utilities. New York, N. Y., G. P. Putnam's Sons. 1928.

54. Idaho Public Utilities Commission Re Mountain States Telephone and Telegraph Company. Public Utilities Reports 3d 13: 560-563. 1956.

55. Iulo, William. Electric utilities - costs and performance. Pullman, Washington, Washington State University Press. 1961.

56. Iulo, William. The relative performance of individual electric utilities. Land Economics 38, No. 4: 315-326. November 1962.

57. Jerome, William Travers. Executive control--the catalyst. New York, N. Y., John Wiley and Sons, Inc. 1961.

58. Johnsen, Julia E. Government ownership of electric utilities. New York, N. Y., The H. W. Wilson Company. 1937.

59. Jones, Eliot and Bigham, Truman C. Principles of public utilities. New York, N. Y., The Macmillan Company. 1931.

60. Knapp, Charles W. What is the fair rate of return? Public Utilities Fortnightly 57, No. 11: 739-750. May 24, 1956.

61. Koontz, Harold and Gable, Richard W. Public control of economic enterprise. New York, N. Y., McGraw-Hill Book Co., Inc. 1956.

62. Koontz, Harold and O'Donnell, Cyril. Principles of management. New York, N. Y., McGraw-Hill Book Company. 1964.

63. Kosters, Stuart F. Significant trends as to rate base depreciation and rate of return. Public Utilities Fortnightly 52, No. 9: 641-650. October 22, 1953.

64. Levin, Jack. Power ethics. New York, N. Y., Alfred A. Knopf. 1931.

65. Livingston, Robert Teviot and Waite, William W., eds. The manager's job. New York, N. Y., Columbia University Press. 1960.

66. Louisiana Public Service Commission Ex Parte Reserve Telephone Company, Inc. Public Utilities Reports 3d 23: 307-310. 1958.

67. Louisiana Public Service Commission Ex Parte Southern Bell Telephone and Telegraph Company. Public Utilities Reports 3d 26: 55-115. 1959.

68. Lyndon, Lamar. Rate-making for public utilities. New York, N. Y., The McGraw-Hill Book Company, Inc. 1923.

69. Malanos, George. Intermediate economic theory. Chicago, Ill., J. B. Lippincott Company. 1962.

70. Managerial efficiency and rate making. Public Utilities Fortnightly 57, No. 8: 561-564. April 12, 1956.

71. Manual of excellent managements. Fifth edition. New York, N. Y., American Institute of Management. 1959.

72. Maphis, Forrester. Has regulation veered from its objective? [Review of comments by F. Warren Brooks.] Public Utilities Fortnightly 54, No. 13: 830-837. December 23, 1954.

73. Martindell, Jackson. The appraisal of management. New York, N. Y., Harper and Row, Publishers. 1962.

74. Martindell, Jackson. Inflation--what it means to utilities and investors. Public Utilities Fortnightly 49, No. 13: June 19, 1952.

75. Massel, Mark S. Competition and monopoly. Washington, D. C., The Brookings Institution. 1962.

76. McGuire, Joseph W. Business and society. New York, N. Y., McGraw-Hill Book Co., Inc. 1963.

77. McKeage, Everett C. What public interest does utility regulation serve? Public Utilities Fortnightly 69, No. 4: 230-236. February 15, 1962.

78. Morgan, Charles Stillman. Regulation and the Management of Public Utilities. Boston, Mass., Houghton Mifflin Company. 1923.

79. Morton, Walter A. Creative Regulation. Land Economics 39, No. 4: 367-374. November 1963.

80. Mosher, William F., editor. Electric utilities--the crisis in public control. New York, N. Y., Harper and Brothers Publishers. 1929.

81. Nash, L. R. The economics of public utilities. New York, N. Y., McGraw-Hill Book Company, Inc. 1925.

82. Nash, L. R. Public utility rate structures. New York, N. Y., McGraw-Hill Book Company, Inc. 1933.

83. New Hampshire Supreme Court. New England Telephone and Telegraph Company v. State of New Hampshire. Public Utilities Reports 3d 44: 498-509. 1962.

84. New Jersey Superior Court, Appellate Division. Township Committee of Lakewood v. Lakewood Water Company. Public Utilities Reports 3d 28: 226-233. 1959.

85. New Mexico Public Service Commission Re Lea County Gas Company. Public Utilities Reports 3d 22: 212-223. 1958.

86. New York Public Service Commission Re General Telephone Company of Upstate New York, Inc. Public Utilities Reports 3d 41: 1-30. 1962.

87. North Carolina Utilities Commission Re Durham Telephone Company. Public Utilities Reports 3d 14: 57-73. 1956.

88. Oklahoma Corporation Commission Re Western Light and Telephone Company, Inc. Public Utilities Reports 3d 17: 422-430. 1957.

89. Oregon Public Utility Commissioner Re West Coast Telephone Company. Public Utilities Reports 3d 27: 489-499. 1959.

90. Oxenfeldt, Alfred R. Innovation and public utility regulation. Public Utilities Fortnightly 69, No. 11: 721-727. May 24, 1962.

91. Perrine, George R. A regulator looks at a rate case. Public Utilities Fortnightly 70, No. 3: 124-144. August 2, 1962.

92. Petteway, Lewis W. Florida's regulatory climate. Public Utilities Fortnightly 71, No. 10: 34-46. May 9, 1963.

93. Phillips, Charles F. Regulation in a competitive economy. Public Utilities Fortnightly 66, No. 11: 793-798. November 24, 1960.

94. Phillips, Charles F. Toward an improved regulatory climate. Public Utilities Fortnightly 70, No. 13: 881-893. December 20, 1962.

95. Pond, Oscar L. A treatise on the law of public utilities. Volume II. Indianapolis, Inc., The Bobbs-Merrill Company. 1932.

96. Prendergast, William A. Public utilities and the people. New York, N. Y., D. Appleton-Century Company, Inc. 1933.

97. Rate of return should include reward for efficiency. Review of Address by Maurice J. Reis. Public Utilities Fortnightly 73, No. 1: 52-53. January 2, 1964.

98. Raymond, William G. The public and its utilities. New York, N. Y., John Wiley and Sons, Inc. 1925.

99. Raymond, William G. What is fair? New York, N. Y., John Wiley and Sons, Inc. 1918.

100. Reder, Melvin Warren. Studies in the theory of welfare economics. New York, N. Y., Columbia University Press. 1947.

101. The role of profits in the enterprise system. [Review of speech by John J. Scanlon.] Public Utilities Fortnightly 70, No. 4: 236-239. August 16, 1962.

102. Rose, T. G. The management audit. London, England, Gee and Company (Publishers) Limited. 1961.

103. Rosenthal, Richard L. Management and regulatory responsibility to investors. Public Utilities Fortnightly 72, No. 4: 15-30. August 15, 1963.

104. Ruggles, C. O. The role of rate making. Harvard Business Review 18, No. 2: 215-230. Winter 1940.

105. Smith, Adam. The wealth of nations. Selections, Book I. Chicago, Illinois, Henry Regnery Company. 1953.

106. Smith, J. Stanford. New world of the entrepreneur. The Conference of Business School Deans. New York, N. Y., Crotonville. July 29, 1963.

107. Smith, Nelson Lee. The fair rate of return in public utility regulation. New York, N. Y., Houghton Mifflin Company. 1932.

108. Spacek, Leonard. The status of public utility regulation. Proceedings of the Iowa State Conference on Public Utility Valuation and The Rate Making Process. 1962: 5-35. 1962.

109. Spurr, Henry C. Guiding principles of public service regulation. Volume III. Rochester, N. Y., Public Utilities Reports, Inc. 1926.

110. State of Missouri ex rel Southwestern Bell Telephone Company v. Public Service Commission of Missouri, et al. United States Reports 262: 276-321. 1923.

111. Stathas, P. P. Effect of regulation on public utility financing. Proceedings of the Iowa State Conference on Public Utility Valuation and The Rate Making Process. 1963: 343-347, 357-358. 1963.

112. Stocking, George W. and Watkins, Myron W. Monopoly and free enterprise. New York, N. Y., The Twentieth Century Fund, Inc. 1951.

113. Sullivan, Frank C. Is public regulation of utilities in jeopardy? Public Utilities Fortnightly 49, No. 12: 773-785. June 5, 1952.

114. Taussig, F. W. Principles of economics. Volume II. New York, N. Y., The MacMillan Company. 1911.

115. Taussig, F. W. and Barker, W. S. American corporations and their executives: a statistical inquiry. Quarterly Journal of Economics 40: 1-51. 1926.

116. Thompson, C. Woody and Smith, Wendell R. Public utility economics. New York, N. Y., McGraw-Hill Book Company, Inc. 1941.

117. Thorndike, Robert L. and Hagen, Elizabeth. Measurement and evaluation in psychology and education. New York, N. Y., John Wiley and Sons, Inc. 1955.

118. Thurstone, L. L. and Chave, E. J. The measurement of attitude. Chicago, Illinois, The University of Chicago Press. 1929.

119. Tiffin, Joseph and McCormick, Ernest J. Industrial psychology. Englewood Cliffs, N. J., Prentice-Hall, Inc. 1958.

120. Trachsel, Herman H. Public utility regulation. Chicago, Illinois, Richard D. Irwin, Inc. 1947.

121. Trebing, Harry M. Toward an incentive system of regulation. Public Utilities Fortnightly 72, No. 2: 22-37. July 18, 1963.

122. Trebing, Harry M. What's wrong with commission regulation. Part I. Public Utilities Fortnightly 65, No. 10: 660-670. May 12, 1960.

123. Trebing, Harry M. What's wrong with commission regulation. Part II. Public Utilities Fortnightly 65, No. 11: 738-750. May 26, 1960.

124. Troxel, Emery. Economics of public utilities. New York, N. Y., Rinehart and Company, Inc. 1947.

125. Ulffers, Carl A. Jr. The need for profit. Public Utilities Fortnightly 69, No. 10: 672-679. May 10, 1962.

126. Untereiner, Ray E. The public interest in utility regulation. Iowa State Conference on Public Utility Valuation and The Rate Making Process Proceedings 1963: 349-355. 1963.

127. Walker, Helen G. and Lev, Joseph. Statistical inference. New York, N. Y., Henry Holt and Company. 1953.

128. Washington and the utilities. Public Utilities Fortnightly 41, No. 6: 363-364. March 11, 1948.

129. Webber, Abraham C. Principles of public utility regulation. Washington, D. C., Public Utilities Reports, Inc. 1941.

130. Welch, Francis X. Constant surveillance: a modern regulatory tool. Reprinted from Villanova Law Review 8, No. 3: 340-361. Spring 1963.

131. Welch, Francis X. Current fallacies in regulation. Public Utilities Fortnightly 66, No. 1: 16-24. July 7, 1960.

132. Welch, Francis X. Opening address. Iowa State Conference on Public Utility Valuation and The Rate Making Process Proceedings 1963: 3-12. 1963.

133. What others think. [Review of paper by Laurence S. Knappen.] Public Utilities Fortnightly 55, No. 10: 571. May 12, 1955.

134. Whitmore, Charles. The company's viewpoint. Iowa State Conference on Public Utility Valuation and The Rate Making Process Proceedings 1962: 95-116. 1962.

135. Whitten, Robert H. Regulation of public service companies in Great Britain. New York City, Public Service Commission for the First District. 1914.

136. Whitten, Robert H. Valuation of public service corporations. New York, N. Y., The Banks Law Publishing Company. 1913.

137. Whitten, Robert H. Valuation of public service corporations. Volume II. New York, N. Y., The Banks Law Publishing Company. 1928.

138. Wilcox, Clair. Public policies toward business. Homewood, Illinois, Richard D. Irwin, Inc. 1960.

139. Wilson, G. Lloyd, Herring, James M. and Eutsler, Roland B. Public utility regulation. New York, N. Y., McGraw-Hill Book Company, Inc. 1938.

140. Wolins, Leroy. Problems in the analysis of numbers assigned to stimuli by judges. [Mimeographed material.] Ames, Iowa, Iowa State University, Statistical Department. 1964.

141. Wood, L. I. The corporation and society. Conference on Education for Business. New York, N. Y., Crotonville. August 2, 1963.

ACKNOWLEDGMENTS

The author is indebted to Professor J. K. Walkup, to the members of his committee, and to the other professors who have provided guidance and counseling during these past two years. The author has appreciated his close association with Professor Harold A. Cowles and is especially grateful for the assistance he has provided.

A special debt of gratitude is due Professor Leroy Wolins of the Statistics and Psychology Departments at Iowa State University. His guidance and assistance were invaluable in the development and analysis of the attitude survey questionnaire. Professor Roy E. Warman, from the Department of Psychology, also provided valuable counsel.

The author is extremely grateful for the financial assistance offered by the Ford Foundation through its Forgivable Loan program.

APPENDIX A

IOWA STATE UNIVERSITY

OF SCIENCE AND TECHNOLOGY

Ames, Iowa 50010

Department of Industrial Engineering

April 27, 1964

Dr. Harold Cowles recently requested your assistance in preparing an attitude survey. We appreciate your willing acceptance to help.

The measurement of an attitude, requires a standard of reference, or base, which can be used for comparative purposes. The material enclosed with this letter, when completed according to the directions, will provide information which will enable us to determine the standard of reference to be used in measuring a particular attitude variable.

We are interested in the attitudes of regulators and management within three different areas. Three sets of statements are therefore enclosed so that we may determine a standard of reference for each attitude variable.

We would request your close attention to the directions, noting that you are not giving your own attitude on any statement, but only responding regarding the favorableness or unfavorableness of an attitude expressed by some stranger.

Again, thank you for taking time from what I'm sure is a busy schedule to assist us in this program. Your earliest reply will be appreciated.

Yours very truly,

Clifford E. Smith
Instructor

CES:enr

Enclosures

Directions:

Following these directions are statements about current regulatory practice and its effect upon managerial performance. We are interested in your judgment concerning how favorable an attitude is expressed by each statement. A good way to keep these directions in mind is to imagine you overheard a stranger making each of these statements. Then on the basis of the statement the stranger made, you are to indicate <u>how certain</u> you are that the stranger has a favorable attitude toward current regulatory practice and its effect upon managerial performance. If you can be sure the stranger <u>does not</u> have a favorable attitude by the statement he made, indicate this by marking "1" next to the statement. This response, "1", indicates the chances are 1 in one hundred that the stranger has a favorable attitude toward current regulatory practice and its effect upon managerial performance. If you can be sure the stranger <u>does</u> have a favorable attitude by the statement he made, indicate this by marking "99" next to the statement. This response, "99", indicates the chances are 99 in one hundred that the stranger has a favorable attitude toward current regulatory practice and its effect upon managerial performance. Use numbers between 1 and 99 to indicate intermediate degrees of certainty and if you feel the statement provides no information about the attitude of the stranger indicate this by marking "50" next to the statement.

1. I think regulation provides incentive to management to strive for exceptional performance. _____

2. I feel that regulation fails to provide incentive to management to strive for exceptional performance. _____

3. Regulation encourages inefficient and poor management performance. _____

4. I believe that the normal "regulatory lag" provides management with sufficient incentive to improve their performance. _____

5. I think that regulation stifles managerial incentives for innovation and greater efficiency. _____

6. I don't think regulation encourages efficient managerial performance. _____

7. I feel that current regulation fails to provide an incentive to management to improve performance but it doesn't stifle incentives either. _____

8. I think regulation prevents inefficient management. _____

9. I believe regulation prevents grossly inefficient management. _____

10. Regulation only protects the public against the most obvious and easily identified managerial practices considered inefficient and poor management. _____

11. I'm satisfied with current regulatory practices. _____

12. I think current regulation obstructs effective managerial performance. _____

13. I feel that regulation at the present reduces the effectiveness of management. _____

14. The current regulatory practice does not prevent poor management. _____

15. I don't believe that present regulation encourages inefficient managerial performance. _____

16. I feel that when management raises profit, it is offset by a regulatory act that reduces it, thus the normal incentive which motivates business operations is impaired. _____

17. I believe that current regulation is too restrictive of management, and should be more lenient. _____

18. I feel that current regulation provides the same incentives for exceptional performance to utilities as other firms have under non-regulated competition. _____

19. I think current regulation neither condones inefficiency or encourages improved managerial performance. _____

20. I believe motivation for exceptional performance must come from within the firm rather than from the regulatory body. _____

21. I feel management receives the maximum possible encouragement for exceptional performance under the present regulatory practices. _____

22. Current regulation may give some incentive to management to perform above average, but not enough incentive to bring out the best management performance. _____

23. I think current regulation encourages only average performance. _____

24. Current regulation encourages above average performance. _____

25. I believe that regulation has a responsibility toward the consumer to guard against inefficient performance. _____

26. I don't feel that regulation is concerned with managerial performance. _____

27. I think regulation encourages exceptional managerial performance. _____

28. I don't think regulation hinders performance improvement. _____

29. Regulation does not protect poor performance. _____

30. I believe that regulation does penalize inefficient managerial performance. _____

31. The regulators reward managerial effectiveness. _____

32. The regulatory body is concerned with more than just preventing gross inefficiencies of management. _____

33. I believe the regulatory body recognizes managerial effectiveness. _____

34. I don't think that regulators recognize managerial performance. _____

35. I feel that the influence of regulatory bodies on managerial effectiveness is slight compared to other pressures on management for exceptional performance. _____

36. I believe the regulation concers itself with only managerial performance which is below average. _____

37. I don't think that regulation restricts management in working for improved performance. _____

38. I don't feel that regulation attemtps to influence managerial performance in any way. _____

39. I think the regulatory body has more important responsibilities than trying to influence management performance. _____

Directions:

Following these directions are statements about the possibility of measuring managerial performance. We are interested in your judgment concerning how favorable an attitude is expressed by each statement. A good way to keep these directions in mind is to imagine you overheard a stranger making each of these statements. Then on the basis of the statement the stranger made, you are to indicate <u>how certain</u> you are that the stranger has a favorable attitude toward the possibility of measuring managerial performance. If you can be sure the stranger <u>does not</u> have a favorable attitude by the statement he made, indicate this by marking "1" next to the statement. This response, "1" indicates the chances are 1 in one hundred that the stranger has a favorable attitude toward the possibility of measuring managerial performance. If you can be sure the stranger <u>does</u> have a favorable attitude by the statement he made, indicate this by marking "99" next to the statement. This response, "99" indicates the chances are 99 in one hundred that the stranger has a favorable attitude toward the possibility of measuring managerial performance. Use numbers between 1 and 99 to indicate intermediate degrees of certainty and if you feel the statement provides no information about the attitude of the stranger, indicate this by marking "50" next to the statement.

1. It is impossible to measure managerial performance. _____

2. I believe that a measure of managerial performance can be obtained. _____

3. I feel that productivity, as measured by total unit cost per unit sold, is a good indicator of managerial performance. _____

4. I think that the Management Audit performed by the American Institute of Managers provides a good evaluation of management performance. _____

5. I think that the regulatory body has sufficient information to enable it to evaluate managerial performance. _____

6. I think that a group of business men and educators, representing different managerial areas, could provide an excellent evaluation of any company's management performance. _____

7. I don't think management itself can accurately evaluate its own performance. _____

8. I believe it is definitely possible to evaluate managerial performance quite accurately. _____

9. It may be possible to evaluate managerial performance in a very rough way. _____

10. I'm sure it is possible to evaluate managerial performance. _____

11. I think that the evaluation of managerial performance is too subjective to be of any value. _____

12. I don't believe there is any practical way of evaluating managerial performance. _____

13. I think degrees of management performance (good, poor, exceptional) are too ill-defined, making attempts at evaluation impractical. _____

Directions:

Following these directions are statements about research on a method or methods for providing incentive to Utilities through regulation. We are interested in your judgment concerning how favorable an attitude is expressed by each statement. A good way to keep these directions in mind is to imagine you overheard a stranger making each of these statements. Then on the basis of the statement the stranger made, you are to indicate how certain you are that the stranger has a favorable attitude toward research on a method or methods for providing incentive to Utilities through regulation. If you can be sure the stranger does not have a favorable attitude by the statement he made, indicate this by marking "1" next to the statement. This response, "1", indicates the chances are 1 in one hundred that the stranger has a favorable attitude toward research on a method or methods for providing incentive to Utilities through regulation. If you can be sure the stranger does have a favorable attitude by the statement he made, indicate this my marking "99" next to the statement. This response, "99", indicates the chances are 99 in one hundred that the stranger has a favorable attitude toward research on a method or methods for providing incentive to Utilities through regulation. Use numbers between 1 and 99 to indicate intermediate degrees of certainty and if you feel the statement provides no information about the attitude of the stranger indicate this by marking "50" next to the statement.

1. I feel research in this area is urgently needed. _____
2. I believe that a certain amount of research in this area would be beneficial. _____
3. I don't think we should waste any time or money on research in this area. _____
4. I consider other problems in the utility - regulation relationship to be more important and in need of research. _____
5. I feel that research is important in this area but certainly not urgent. _____
6. I don't believe much could be gained by research in this area. _____
7. I am not interested in research in this area. _____
8. I can't see where research is necessary in this area. _____
9. I guess some research should be done in this area just as a matter of policy. _____
10. We need continued research in this area. _____
11. I don't think research in this area will do any harm. _____
12. We most definitely need extensive research in this area. _____

APPENDIX B

IOWA STATE UNIVERSITY
of Science and Technology
AMES, IOWA 50010

Engineering Extension, 110 Marston Hall
Area Code 515 231-

During this past year we have become interested in the question of managerial efficiency and performance and the effect, if any, which regulation has upon it. We feel that an important preliminary step to extensive research in this area is an opinion or attitude survey of the interested parties.

To assist us in this preliminary step we invite you to participate in this initial research by completing an attitude survey questionnaire.

To give you some idea of the form to be used we have enclosed a sample covering a hypothetical question. Please note that only your indication of agreement or disagreement with a specific statement is required. For this reason, we do not believe that completion of this survey will be particularly time consuming.

We would certainly appreciate your assistance in this research and hope that you will be able to participate personally. All the replies will be strictly confidential. All information will be used in a group basis with no reference to specific individuals.

Sincerely,

Clifford E. Smith
Instructor

IOWA STATE UNIVERSITY
of Science and Technology
AMES, IOWA 50010

Engineering Extension, 110 Marston Hall
Area Code 515 231-

During this past year we have become interested in the question of managerial efficiency and performance and the effect, if any, which regulation has upon it. We feel that an important preliminary step to extensive research in this area is an opinion or attitude survey of the interested parties.

To assist us in this preliminary step we invite the commissioners, and possibly one or two of their staff, to participate in this initial research by completing an attitude survey questionnaire.

To give you some idea of the form to be used we have enclosed a sample covering a hypothetical question. Please note that only your indication of agreement or disagreement with a specific statement is required. For this reason, we do not believe that completion of this survey will be particularly time consuming.

We would certainly appreciate your assistance in this research and hope that you will be able to participate personally as well as a number of your colleagues and staff members. We would like to hear from you regarding the names and addresses of those persons to whom we may mail the subject survey questionnaire.

All the replies will be strictly confidential. All information will be used on a group basis with no reference to specific individuals.

Sincerely,

Clifford E. Smith
Instructor

Sample Survey Questionnaire

Directions:

Following these directions are statements about the effect of current regulation upon accounting methods. We are interested in your feelings or attitude about each statement. Some of these statements you will probably agree with. That is, some statements will express your own attitudes or feelings about the effect of current regulation upon accounting methods. Other statements will express attitudes or feelings opposite to yours. Still other statements you will be uncertain to some degree about how well it describes your feelings or attitudes.

For each statement indicate how well it describes your attitude by a number from 1 to 99. If you are certain the statement describes your attitude write "99" in the space provided after the statement. If you are certain the statement describes an attitude opposite to yours write "1" in the space provided. If you are very uncertain or can not decide if the statement describes your attitude write "50" in the space provided. Use numbers between 50 and 99 to indicate various degrees of agreement with a statement. Use numbers between 1 and 50 to indicate various degrees of disagreement with each statement. You may wish to refer to the following scale in order to keep these directions in mind.

1	50	99
Disagree	Uncertain	Agree

1. Current regulation does not influence accounting practices. _____

2. Regulation specifies an accounting method. _____

3. Regulation gives a utility sufficient freedom in selecting their accounting methods. _____

4. Regulation sees minimum standards regarding an accounting method. _____

5. A well managed utility is not hampered by the current regulatory requirements on accounting procedure. _____

6. Continuation of similar questions, some you will agree with to a degree and others you will disagree with to a degree.

APPENDIX C

IOWA STATE UNIVERSITY
of Science and Technology
AMES, IOWA 50010

Engineering Extension, 110 Marston Hall
Area Code 515 231-

After receiving the first replies to our letter of May 12, we realized that we had failed to fully convey the information intended.

As noted, we are interested in managerial efficiency in public utilities and the effect, if any, which state regulation has upon it. We have designed, and are having printed, a questionnaire which will measure the attitudes of regulators and public utility management on this subject.

Enclosed with our first letter was a "sample" questionnaire to indicate the form which our survey quentionnaire would take and the nature of the response required. The attitude being measured and the statements used in this "sample" were selected for illustrative purposes only and will not be used in the actual survey.

The survey questionnaire will be ready for mailing June 1 and will include a group of statements to which each participant will respond according to the degree of his agreement or disagreement with each statement. (See our "sample" Questionnaire) These statements have been carefully selected and tested to reflect the attitudes of regulators and public utility management. Our survey will include utility managers and commissioners from across the nation and will provide information about their attitudes regarding the effect of regulation on managerial efficiency. The survey will also indicate whether further research is needed in this area, if so, what direction such research should take.

We are asking you, as Chairman of the commission, to provide us with the names and addresses of those persons whom you believe will be willing to participate in this survey. We would like to have a number of participants from each state commission, preferably each of the commissioners and one or two of the staff. A return envelope is enclosed for your convenience.

We regret any confusion which our first letter created and hope that we have clarified the situation. We would appreciate your early reply and will mail the survey questionnaire promptly to those you indicate.

Thank you for your assistance and cooperation.

Sincerely,

Clifford E. Smith

Clifford E. Smith
Instructor

APPENDIX D

IOWA STATE UNIVERSITY
of Science and Technology
AMES, IOWA 50010

Engineering Extension, 110 Marston Hall
Area Code 515 231- 3101

June 12, 1964

Dear Sir:

We recently wrote to you and indicated our interest in the question of managerial efficiency and performance and the effect, if any, which state regulation has upon it.

At that time we invited your participation in the initial research. While no response to our original letter was requested, many of you have indicated considerable interest in this study and have willingly volunteered to assist us.

We now enclose the Attitude Survey Questionnaire which we would like to have you complete on an individual basis. We encourage you to read the directions very carefully before proceeding with each group or statements. This will reduce the possibility of any misunderstanding and will increase the validity and value of the results.

We certainly appreciate your assistance and assure you that all replies will be strictly confidential. We welcome any personal comments and any information which you care to submit in addition to the questionnaire. Please feel free to contact me if you have any questions.

Sincerely,

Clifford E. Smith

Clifford E. Smith
Instructor

CES:jt

Enclosure

IOWA STATE UNIVERSITY
of Science and Technology
AMES, IOWA 50010

Engineering Extension, 110 Marston Hall
Area Code 515 231- 3101

June 12, 1964

Dear Sir:

We have initiated research here at Iowa State University into the question of managerial efficiency in public utilities and the effect, if any, which state regulation has upon it.

We recently requested the chairman of each of the state commissions to submit names of those individuals who would be willing to participate in our preliminary research by completing an attitude survey questionnaire.

Your name was submitted and we now enclose the Attitude Survey Questionnaire which we would like you to complete on an individual basis. We encourage you to read the directions very carefully before proceeding with each group of statements. This will reduce the possibility of any misunderstanding and will increase the validity and value of the results.

We certainly appreciate your assistance and assure you that all replies will be strictly confidential. We welcome any personal comments and any information which you care to submit in addition to the questionnaire. Please feel free to contact me if you have any questions.

Sincerely,

Clifford E. Smith

Clifford E. Smith
Instructor

CES:jt

Enclosure

IOWA STATE UNIVERSITY
of Science and Technology
AMES, IOWA 50010

Engineering Extension, 110 Marston Hall
Area Code 515 231- 3101

June 12, 1964

The mailing of our "Attitude Survey Questionnaire" as described in our letter of June 4 is progressing very satisfactorily.

In hopes of expediting the distribution of this questionnaire, we are taking the liberty of sending you five copies with the hope that you will distribute them to those persons who will be willing to participate. If additional copies are required, please let us know.

A self-addressed stamped envelope is enclosed for each questionnaire. We hope that a number of your staff and fellow commissioners will be able to respond to this survey.

Sincerely,

Clifford E. Smith

Clifford E. Smith
Instructor

CES:jt

Enclosure

APPENDIX E

ATTITUDE SURVEY QUESTIONNAIRE

Name of Respondent: _____ (Optional)

Title: _____ (Optional)

Company: _____ (Optional)

For classification and analysis purposes we would appreciate the following information:

1. The majority of the electric, gas and telephone utilities are regulated by both a state and federal agency. While this survey is concerned only with attitudes about state regulation, please indicate by whom you are regulated.

   a. Local regulation only _____
   b. State commission _____
   c. Federal commission _____

2. Type of business and the method of financing.

   Holding Co._____ Telephone_____ Investor owned_____
   Operating Co._____ Gas_____ Other_____
   Distribution Co._____ Electric_____ (Co-op, municipal, etc.)
   (Sell primarily to operating Co's.) Regulatory Commissioner_____
   Regulatory Staff member_____

3. What method is used by the state regulatory body in determining the rate base? (Provide this information for the state in which you do the major portion of your business. If your business covers a number of states, you may elect to omit this question.)

   State_____ Original cost_____
   Fair value_____
   Other (explain)_____

4. Do you allow (as commissioners), or are you regulated under (as a utility), a plan which allows continuous control of earnings or a so called sliding scale arrangement?

   Continuous Control of Earnings Sliding Scale Plan

Continuous Control of Earnings
Yes_____
No_____

Sliding Scale Plan
Yes_____
No_____

If yes, can you provide information on such a plan or plans?

5. Does the commission recognize managerial efficiency when considering the adequacy of the return? Please check the appropriate statement (s).

No, the commission does not recognize managerial efficiency. _____
Yes, and they allow an increased rate of return for efficient management. _____
Yes, and they penalize inefficient management with a reduced rate of return. _____
Yes, but it does not influence the rate of return. _____
Yes, and they may refuse a rate increase for inefficient management. _____
Yes, and they reward management in some manner other than by an increased rate of return. _____
Yes, (Other-please explain)

6. What do you consider a fair rate of return for a utility with:

a. Average managerial performance_____
b. Exceptional managerial performance_____
c. Poor managerial performance_____
d. Cannot say_____

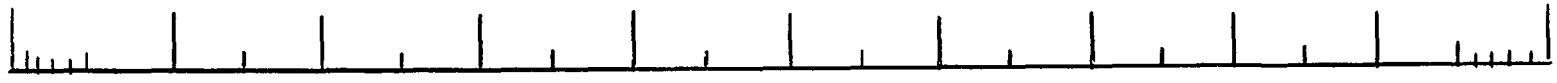
ATTITUDE GROUP I
CURRENT EFFECT OF REGULATORY PRACTICE

Please read carefully before proceeding.

Directions:

Following these directions are a group of statements about current regulatory practice and its effect upon managerial performance. We are interested in your feelings or attitude about each statement. Some of these statements you will probably agree with. That is, some statements will express your own attitudes or feelings about current regulatory practice and its effect upon managerial performance. Other statements will express attitudes or feelings opposite to yours. Still other statements you will be uncertain to some degree about how well it describes your feelings or attitudes.

For each statement indicate how well it describes your attitude by a number from 1 to 99. If you are certain the statement describes your attitude write "99" in the space provided after the statement. If you are certain the statement describes an attitude opposite to yours write "1" in the space provided. If you are very uncertain or cannot decide if the statement describes your attitude write "50" in the space provided. Use numbers between 50 and 99 to indicate various degrees of agreement with a statement. Use numbers between 1 and 50 to indicate various degrees of disagreement with each statement. You may wish to refer to the following scale in order to keep these directions in mind:



1 10 20 30 40 50 60 70 80 90 99

Disagree Uncertain Agree

1. Regulation encourages inefficient and poor management performance. ____

2. I feel that current regulation fails to provide an incentive to management to improve performance but it doesn't stifle incentives either. ____

3. Regulation only protects the public against the most obvious and easily identified managerial practices considered inefficient and poor management. ____

4. I don't believe that present regulation encourages inefficient managerial

[illegible] managerial practices considered inefficient and poor management. _____

4. I don't believe that present regulation encourages inefficient managerial performance. _____

5. I think current regulation neither condones inefficiency or encourages improved managerial performance. _____

6. I feel management receives the maximum possible encouragement for exceptional performance under the present regulatory practices. _____

7. I believe the regulatory body recognizes managerial effectiveness. _____

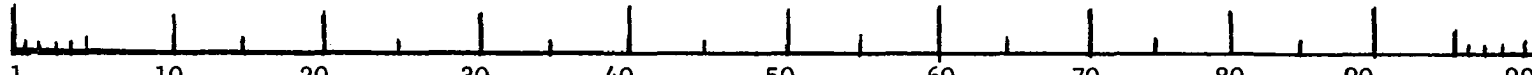
ATTITUDE GROUP II
MEASUREMENT OF MANAGERIAL PERFORMANCE

Please read carefully before proceeding.

Directions:

Following these directions are statements about the possibility of measuring managerial performance. Some of these statements you will probably agree with. That is, some statements will express your own attitudes or feelings about the possibility of measuring managerial performance. Other statements will express attitudes or feelings opposite to yours. Still other statements you will be uncertain to some degree about how well it describes your feelings or attitudes.

For each statement indicate how well it describes your attitude by a number from 1 to 99. If you are certain the statement describes your attitude write "99" in the space provided after the statement. If you are certain the statement describes an attitude opposite to yours write "1" in the space provided. If you are very uncertain or cannot decide if the statement describes your attitude write "50" in the space provided. Use numbers between 50 and 99 to indicate various degrees of agreement with a statement. Use numbers between 1 and 50 to indicate various degrees of disagreement with each statement. You may wish to refer to the following scale in order to keep these directions in mind.



1. I think that the Management Audit performed by the American Institute of Managers provides a good evaluation of managerial performance. ____

2. I think that the regulatory body has sufficient information to enable them to evaluate managerial performance. ____

3. I don't think management itself can accurately evaluate their own performance

to evaluate managerial performance. ____

3. I don't think management itself can accurately evaluate their own performance. ____

4. I believe it is definitely possible to evaluate managerial performance quite accurately. ____

5. It may be possible to evaluate managerial performance in a very rought way. ____

6. I think that the evaluation of managerial performance is too subjective to be of any value. ____

7. I don't believe there is any practical way of evaluating managerial performance. ____

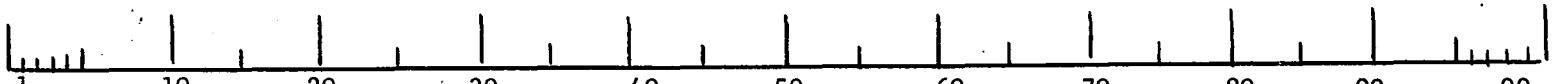
ATTITUDE GROUP III
RESEARCH REQUIREMENTS

Please read carefully before proceeding.

Directions:

Following these directions are statements about research on a method or methods for providing incentive to utilities through regulation. We are interested in your feelings or attitude about each statement. Some of these statements you will probably agree with. That is, some statements will express your own attitudes or feelings about research on a method or methods for providing incentive to utilities through regulation. Other statements will express attitudes or feelings opposite to yours. Still other statements you will be uncertain to some degree about how well it describes your feelings or attitudes.

For each statement indicate how well it describes your attitude by a number from 1 to 99. If you are certain the statement describes your attitude write "99" in the space provided after the statement. If you are certain the statement describes an attitude opposite to yours write "1" in the space provided. If you are very uncertain or cannot decide if the statement describes your attitude write "50" in the space provided. Use numbers between 50 and 99 to indicate various degrees of agreement with a statement. Use numbers between 1 and 50 to indicate various degrees of disagreement with each statement. You may wish to refer to the following scale in order to keep these directions in mind.



Disagree Uncertain Agree

1. I believe that a certain amount of research in this area would be beneficial. ____

2. I don't think we should waste any time or money on research in this area. ____

3. I guess some research should be done in this area just as a matter of policy. ____

3. I guess some research should be done in this area just as a matter of policy. _____

4. I don't think research in this area will do any harm. _____

5. We most definitely need extensive research in this area. _____

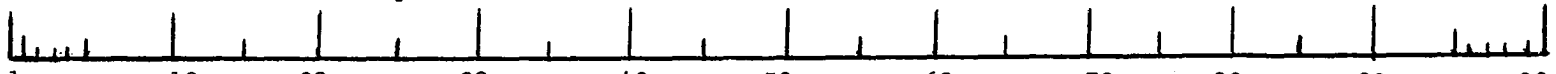
ATTITUDE GROUP IV
THE EFFECT REGULATION SHOULD HAVE

Please read carefully before proceeding.

Directions:

Following these directions are statements about regulation and the effect which it should have upon managerial performance. We are interested in your feelings or attitude about each statement. Some of these statements you will probably agree with. That is, some statements will express your own attitudes or feelings about regulation and the effect which it should have on managerial performance. Other statements will express attitudes or feelings opposite to yours. Still other statements you will be uncertain to some degree about how well it describes your feelings or attitudes.

For each statement indicate how well it describes your attitude by a number from 1 to 99. If you are certain the statement describes your attitude, write "99" in the space provided after the statement. If you are certain the statement describes an attitude opposite to yours, write "1" in the space provided. If you are very uncertain or cannot decide if the statement describes your attitude write "50" in the space provided. Use numbers between 50 and 99 to indicate various degrees of agreement with a statement. Use numbers between 1 and 50 to indicate various degrees of disagreement with each statement. You may wish to refer to the following scale in order to keep these directions in mind.



1 10 20 30 40 50 60 70 80 90 99

Disagree Uncertain Agree

1. I don't believe that regulation should try to influence managerial performance. ____

2. I think regulation should encourage exceptional managerial performance. ____

3. The regulatory process should penalize inefficient managerial performance. ____

3. The regulatory process should penalize inefficient managerial performance. ____

4. I believe the regulatory process should provide an incentive to management to encourage exceptional performance. ____

5. The regulatory body's basic concern should be in preventing gross inefficiencies of management. ____

6. I believe the regulatory body should recognize managerial performance in some manner. ____

7. The regulatory body should recognize that its influence upon managerial performance will be negligible at best. ____

8. Regulation should only try to influence and improve managerial performance which is below average. ____

9. The regulatory process should not protect inefficient performance. ____

10. Regulation should be a substitute for competition. ____

11. The regulatory process should not remove the incentive for exceptional managerial performance. ____

12. The regulatory process should not treat efficient management and inefficient managements alike as this tends to remove the incentive to be exceptional. ____

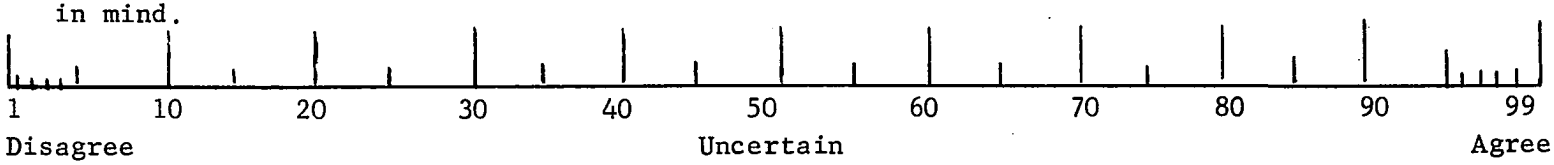
ATTITUDE GROUP V
REGULATORY ACTION & MOTIVATION

Please read carefully before proceeding.

Directions:

Following these directions are statements about regulatory action intended as motivation to achieve exceptional managerial performance. Some of these statements you will probably agree with. That is, some statements will express your own attitudes or feelings about regulatory action intended as motivation to achieve exceptional managerial performance. Other statements will express attitudes or feelings opposite to yours. Still other statements you will be uncertain to some degree about how well it describes your feelings or attitudes.

For each statement indicate how well it describes your attitude by a number from 1 to 99. If you are certain the statement describes your attitude write "99" in the space provided after the statement. If you are certain the statement describes an attitude opposite to yours write "1" in the space provided. If you are very uncertain or cannot decide if the statement describes your attitude write "50" in the space provided. Use numbers between 50 and 99 to indicate various degrees of agreement with a statement. Use numbers between 1 and 50 to indicate various degrees of disagreement with each statement. You may wish to refer to the following scale in order to keep these directions in mind.



1. I believe that a differential rate of return which would reward exceptional managerial performance and penalize poor managerial performance would motivate exception performance. ____

2. The regulatory process would motivate exceptional managerial performance by recognizing managerial performance in a non-monetary manner only. ____

3. The possibility of an increased rate of return for exceptional managerial performance would motivate exceptional performance.

3. The possibility of an increased rate of return for exceptional managerial performance would motivate exceptional performance. _____

4. I believe that public recognition of a Utility for exceptional managerial performance would motivate exceptional performance. _____

5. The motivation for exceptional managerial performance would come from regulatory recognition of adequate wages and salaries rather than from an increased rate of return on invested capital. _____

6. Penalizing poor performance by allowing a reduced rate of return would motivate exceptional managerial performance. _____

7. I believe that the possibility of both an increased rate of return and a non-monetary reward would motivate exceptional managerial performance. _____

8. The regulatory body would motivate exceptional managerial performance by allowing the rate of return to fall within a "zone of reasonableness" with exceptional managerial performance allowed to earn a return in the upper range of the zone. _____

9. The regulatory body would motivate exceptional managerial performance through the rate base and the allowed expenses by disallowing those expenditures resulting from poor and insufficient managerial performance. _____

ATTITUDE GROUP VI
INDUCTORS OF EXCEPTIONAL MANAGEMENT

Please read carefully before proceeding.

Directions:

Following these directions are statements about criteria which indicate exceptional management. We are interested in your feelings or attitude about each statement. Some of these statements you will probably agree with. That is, some statements will express your own attitudes or feelings about criteria which indicate exceptional management. Other statements will express attitudes or feelings opposite to yours. Still other statements you will be uncertain to some degree about how well it describes your feelings or attitudes.

For each statement indicate how well it describes your attitude by a number from 1 to 99. If you are certain the statement describes your attitude write "99" in the space provided after the statement. If you are certain the statement describes an attitude opposite to yours write "1" in the space provided. If you are very uncertain or cannot decide if the statement describes your attitude write "50" in the space provided. Use numbers between 50 and 99 to indicate various degrees of agreement with a statement. Use numbers between 1 and 50 to indicate various degrees of disagreement with each statement. You may wish to refer to the following scale in order to keep these directions in mind.

1. High profit performance indicates exceptional management. _____

2. Continued profit performance over the long term indicates exceptional management. _____

3. Evidence of growth indicates exceptional management. _____

3. Evidence of growth indicates exceptional management. _____

4. Low consumer rates (tariffs) indicates exceptional management. _____

5. Exceptional service to the consumer indicates exceptional management. _____

6. Excellent customer relations indicate exceptional management. _____

7. A management training program indicates exceptional management. _____

8. The composition of the Board (age, qualifications, background of directors) is indicative of exceptional management. _____

9. Extension research on new service and production methods is indicative of exceptional management _____

10. Continued construction of new physical plant indicates exceptional management. _____

11. Excellent employee relations indicates exceptional management. _____

12. Low unit cost of production indicates exceptional management. _____

13. Ready financing available at low interest rates indicates exceptional management. _____

14. Low labor turnover indicates exceptional management. _____

15. High employee morale indicates exceptional management. _____

16. A decentralized organization indicates exceptional management. ____

17. A one-year or operation plan or budget indicates exceptional management. ____

18. A five-year operating plan or budget indicates exceptional management. ____

19. A high rate of return on invested capital indicates exceptional management. ____

20. Very few customer complaints indicates exceptional management. ____

21. An above average wage and salary program indicates exceptional management. ____

22. An above average indirect compensation program indicates exceptional management. ____

23. Increased services to consumers indicates exceptional management. ____

24. A continual increase in the services or improvement in the services to the consumer indicates exceptional management. ____

25. A low rate of absenteeism indicates exceptional management. ____

26. A high quality of supervision indicates exceptional management. ____

27. Highly dedicated employees indicates exceptional management. ____

28. A low frequency and severity rate indicates exceptional management. ____

29. High physical productivity indicates exceptional management. ____

APPENDIX F

IOWA STATE UNIVERSITY
of Science and Technology
AMES, IOWA

Engineering Extension, 110 Marston Hall
Area Code 515 231-

July 8, 1964

Dear Sir:

We hope to soon begin the analysis of responses to the Attitude Survey Questionnaire which we mailed June 19.

We are requesting those who have not yet completed and returned this Questionnaire to do so within the next week if at all possible. I'm sure you have distributed the Questionnaires to those whose time is already in great demand, but we hope this study merits their time and consideration.

Your cooperation in circulating this letter and its request for an early reply is very much appreciated.

To those who have already responded, thank you. It is our intention to provide information concerning the results of this study to those Commissions who participate.

Sincerely,

Clifford E. Smith
Instructor

CES:db

IOWA STATE UNIVERSITY
of Science and Technology
AMES, IOWA

Engineering Extension, 110 Marston Hall
Area Code 515 231-

July 8, 1964

Dear Sir:

We hope to soon begin the analysis of responses to the Attitude Survey Questionnaire which we mailed June 12.

If you have not yet completed and returned this questionnaire, we would encourage you to do so within the next week if at all possible. I'm sure your schedule is already a full one and that your time is in great demand, but we hope you feel this study merits your time and consideration.

Your cooperation and early reply is much appreciated.

If you have already responded, thank you. We plan to provide information concerning the results of this study to those of you who participate.

Sincerely,

Clifford E. Smith

Clifford E. Smith
Instructor

CES:db