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POSSIBLE CONTRIBUTIONS OF THE BEHAVIORAL SCIENCES TO FARM BUSINESS MANAGEMENT

Aaron G. Nelson[1/]
University of Arizona

With rapid expansion in size of the farm business and changes in technology which are taking place in agriculture we need to re-examine our concepts of management in light of new and noteworthy findings in the behavioral sciences--limited for the purpose of this paper primarily to psychology. These findings are of significance to agriculture for a number of reasons. First, the role of management in farm firms is expanding rapidly along with the increasing size and commercialization of farms. Change requires more management--and many changes have and are being brought about by the technological revolution going on in agriculture. Use of relatively more purchased inputs calls for more ability to manage finances and the greater risk involved. Second, larger farm businesses require a larger labor force. In turn, organization and motivation of the labor force assumes more significance. Third, growth in the size of farm businesses and in the role of management increases the need for more information about management to help minimize waste of resources and to facilitate transfer of "going" businesses from one generation to the next.

The objective of this paper is to outline some concepts, behavioral characteristics and methods which behavioral scientists have found to have a significant relationship to managerial performance, and to relate these, where the relationship may not be fully self-evident, to farm business management.[2/] The word "some" is used advisedly since time has not permitted an exhaustive study of the literature. Moreover, it is beyond the scope of this paper to present all the pertinent findings. Three authors were selected as primary references whose investigations are representative of different areas in the behavioral sciences pertaining to management. Writings by H. A. Simon, Professor of Administration and Associate Dean of the Graduate School of Industrial Administration, Carnegie Institute of Technology, provide a wealth of material on theoretical aspects of organization, decision-making, and higher mental processes. Rensis Likert, Director of the Institute of Social Research and Professor of Psychology and

1/ I am indebted to Dr. Raymond V. Bowers, Head, Sociology Department; Dr. Salvatore V. Zagona, Psychology Department; and Dr. Robert S. Firch, Agricultural Economics Department of the University of Arizona for suggestions given in preparation of this paper.

2/ Throughout this paper farm will be used to include ranch. Also, while some authors use entrepreneur rather than manager, the term manager will be used throughout this paper. It is recognized that entrepreneurship and management do not have precisely the same meaning. However, McClelland, the preimary reference which uses entrepreneurship extensively, defines entrepreneur as "....the man who organizes the firm and/or increases its productivity capacity." (reference 5, page 205), which indicates he thinks of entrepreneurship largely in terms of the management function rather than in terms of the ownership function.

and Sociology, University of Michigan, reporting on the Institute's research findings in over 70 separate studies in some 30 different organizations, presents material pertaining to forms of organizational structure, motivation of employees, and management principles and practices used by the most successful managers. David C. McClelland, Professor of Psychology, Harvard University, as a part of his study of economic development, presents considerable material related to the individual--his fundamental motives and the way he organizes his relationships with his associates.

Findings of the behavioral sciences in these areas are synthesized in this paper. Those pertaining to characteristics associated with management are presented first, followed by four sections which outline possible behavioral science contributions or relationships to the four functions of management: (1) to formulate expectations, (2) to formulate a plan of action, (3) to put the plan into effect, and (4) to bear the consequences. Quotations are used extensively to give authoritative emphasis to pertinent views and findings.

Management As a Factor of Production

Management is generally recognized to be the key to successful business operation. Yet, relatively little is known about this factor in agriculture. (See reference 10) More information is needed on the functioning of managers, the factors which lie behind motivation, and the processes used by managers.

Classical economic theory, which postulates a rational manager who maximizes profits, is not adequate in terms of American agriculture. It gives no recognition to the notion of satiation, a concept which plays a rather prominent role in psychological studies of motivation. According to most psychological theories, action stems from drives or aspirations. In this context it is easier to understand why some businessmen continue to work hard and risk large sums in business ventures after they have accumulated more money than they could possibly use.

McClelland points out that goals vary with the level of n Achievement, a measure of a person's "need for achievement."[3/] After examining the results of three separate studies, he concludes, "...People with high n Achievement are not influenced much by money rewards; they are interested in achievement. People with low n Achievement, on the other hand, are influenced by money and can be made to work harder for money or other such external incentives." (5, p. 235)

Only when the drive is satisfied does action terminate. Conditions for satisfying the drive may not be fixed, but may change as the aspiration level moves up or down on the basis of experience. When performance does not coincide with the level of aspiration a search for new alternatives of action is induced

3/ The term n Achievement is taken to represent the strength of a man's concern with achievement. It is a measure of the ambition an individual has to prove himself a prized personality, of a person's inner drive for achievement generated by forces which lie largely within the man himself in his fundamental motives. It is used "...in order to have a technical term which points unmistakably to the fact that the measure was derived in a particular way, and has an operational meaning quite distinct...." (5, p. 43)

and, concurrently, the level of aspiration begins to adjust itself to goals which are practically attainable. (See 2, pp. 333-78; 6, 253-62; and 4, pp. 48, 85, 120-21)

When these psychological concepts are added to classical economic concepts, the manager's goal changes from maximizing profits to attaining a level of profit consistent with his overall objectives. As Simon puts it, "...he would try to 'satisfice' rather than to maximize." (9, p. 263) Satisficing models are more complete than maximizing models since they are concerned not only with equilibrium but also with the way in which it may be reached.

In classical economic theory man chooses among fixed and known alternatives, each with known consequences. However, a manager confronted with real-life situations needs a model which describes the choice process when the alternatives are not given but must be sought, and which recognizes the arduous task of determining the consequences of each alternative. (See 7, chap. 5, and 8, Part 4)

Simon describes the complexity of the ingredients of a decision as follows: "A real-life decision involves some goals or values, some facts about the environment, and some inferences drawn from the values and facts. The goals and values may be simple or complex, consistent or contradictory; the facts may be real or supposed, based on observation of the reports of others; the inference may be valid or spurious." Continuing, he points out that "The whole process (of making a decision) may be viewed, metaphorically, as a process of 'reasoning' where the values and facts serve as premises, and the decision that is finally reached is inferred from these premises." (9, p. 273) The individual premise may then be used as the unit of description, thereby facilitating analysis of the whole interwoven fabric of influences which bear on each decision, the rational elements in the classical theory of choice together with the nonrational elements stemming from psychology and sociology.

As Simon points out, "...analysis of choice in terms of decision premises gives us a conceptual framework for describing and explaining the process of deciding." (9, p. 274) The large number of premises and the complexity of influences probably would inhibit manual analysis. However, the decision premise can be translated into computer terminology which opens the door to study very complex decision processes. While computers cannot think, given adequate instruction they may become superior to man in the decision-making process, due to their large and accurate memory coupled with an infallible "logic" provided by the program which could be developed over a period of time by the human mind. The limit would seem to rest in the adequacy of facts provided, and here the behavioral sciences can be of great help.

Formation of Expectations

Expectations provide some of the basic corner stones upon which management bases its decisions. Gaining knowledge about the formation of expectations involves acquiring knowledge about the environment in which business operates. In this process we are forced "...to include in our model of economic man some of his properties as a learning, estimating, searching, information-processing organism." (9, p. 269) The behavioral sciences can make a contribution in defining and measuring these properties, and in showing the relationships which exist among them.

There is a difference among people in the way they look at the future when information upon which to base judgement is not available. In formulating expectations the self-conficence of an individual, or his "perceived probability of success," enters the picture. There is "...fairly good evidence that subjects with high n Achievement tend to perceive their probability of success as greater, particularly when there are no facts to justify their estimates." (5, p. 222) However, they do not always overestimate their subjective probability of success. When the outcome depends on luck, as in gambling, rather than skill and ability, the man with high n Achievement is not overconfident.

Some indications point toward two distinct types of successful managers: one who works hard at everything--the efficient, forward-looking type, and the other who works hard at only those things which give him a sense of personal accomplishment because of the challenge they provide. The first is motivated by a drive to maintain an efficient, smoothly operating business; the other by a drive to excel in unusual situations where success depends upon innovating activity. A particular individual may be high in both types of managerial ability, but they are conceptually and empirically distinct. (5, p. 228) This distinction is significant in recognizing the type of expectations a manager develops and in understanding how they are a part of his business operation. It has significance in other ways, too, such as in extension work and in financing farm business.

In formation of expectations the long-run as well as the short-run needs to be considered. Production can be increased in the short-run at the expense of longer-run production and efficiency. Conservation of human resources should be given consideration in formulation of expectations. (3, pp. 69-76)

Since many agricultural enterprises involve long term investments, successful farm business managers need to be forward-looking in developing expectations. Here, again, psychological measures may be useful. "...individuals with high n Achievement tend to be oriented forward in time toward longer-range goals, even when that means foregoing immediate pleasures." (5, p. 328)

Formulating a Plan of Action

One of the basic parts of a plan of action is the organization of the business. Without an organization there is only the potential--only the independent behaviors of individuals. (1, p. 67) Behavioral science studies of nonagricultural firms indicate a number of organizational characteristics which may be of significance for agriculture. While the firms studied were very large, comparatively speaking, some of the findings may serve as guideposts, particularly for large, and growing, agricultural businesses.

Two types of organizations with different emphasis have developed in American business. One type has evolved in businesses where repetitive work predominates, the other where varied work prevails. The organization for repetitive work, called the "job-organization" system, is a highly refined model with jobs and performance standards well defined. It is used where management depends primarily upon buying a man's time and putting him into a well-defined niche with specific instructions for job performance. (3, p. 82) The other type of organization, the "cooperative-motivation" system, is much "looser," less formal, providing employees much more freedom in the way they do their jobs.

Research indicates the cooperative-motivation system generally is superior to the job-organization system. While using fully the economic motives, the cooperative motivation system draws on other powerful motives, such as the ego, to build motivational forces. The total motivational force developed is greater and more enduring with the cooperative motivation system.

Significantly better results are obtained when a business organizes its manpower as members of well-knit work groups than when men are supervised on an individual man-to-man basis. We all have a desire to achieve and maintain a sense of personal worth. The primary source of satisfaction for this desire is the response we receive from the people we are close to, in whom we are interested, and whose approval and support we value. (3, p. 104)

Putting the Plan into Action

Behavioral science research indicates that the general pattern of operations of the highest-producing managers differs from that of managers of lower-producing units. "They use all the...classical theories of management...as completely as do the low-producing managers, but in quite different ways. This difference in use arises from the differences in the motives which the high, in contrast to the low-producing managers believe are important in influencing human behavior." (3, p. 99)

The high-producing managers develop their organizations into highly coordinated, highly motivated cooperative social systems. Their interest in the employees, and the supervisory practices they use help to increase production, as the following data show. (3, p. 7)

	Number of supervisors who are:	
	Job-centered	Employee-centered
High-producing sections	1	6
Low-producing sections	7	3

Likert concludes that "If a high level of performance is to be achieved, it appears to be necessary for a supervisor to be employee-centered and at the same time to have high performance goals..." (3, p. 8)

Employees who help develop procedures look upon them as "our procedures" and work harder to make them successful. The result is better morale, less absenteeism, fewer grievances, less waste in the form of scrap, breakage, higher quality work, and increased production. The attitude of workers would seem to be of considerable significance in agriculture where employees operate expensive machinery and equipment and handle high-producing livestock.

In evaluating management methods it should be kept in mind that end results may be misleading, particularly in the short-run. As indicated above, "employee conservation" is important to sustained long-run production in somewhat the same way as soil conservation. Also, as production may be maintained or increased in the short-run at the expense of soil conservation, so also can production be maintained or increased in the short-run at the expense of "employee conservation."

A well planned experiment which lasted for a full year and included 500 employees in four parallel divisions provides support for this hypothesis. (3, pp. 63-71) In two of the four divisions more general supervision was instituted. In the other two groups employees were supervised more closely.

Both groups showed a significant improvement in productivity. However, methods used in the hierarchically controlled groups had an adverse effect on such factors as loyalty, attitudes, interest, and involvement in the work. When the supervisor was away, employees in the "participative" groups kept on working while the the hierarchically controlled groups the work tended to stop. The "participative" groups developed more favorable attitudes toward high producers whereas the hierarchically controlled groups developed pressure to limit production.

Unfortunately, accounting systems of most companies do not provide data on investments in human resources. Yet, it costs money to hire competent employees, to train them, to build effective attitudes, and to develop a smoothly and efficiently functioning organization. Income statements and balance sheets should include these items. Without such information farmers may be led to adopt ineffective managerial systems and practices.

Bearing the Consequences

Carrying responsibility for management involves bearing of risk associated with business ventures.[4/] It is well known that some farmers are willing to take much risk while others appear to be afraid to take even small chances. Both types tend to be hampered in their progress, the first by excessive losses and the second by limitations arising from inadequate resources and poorer farming practices. The behavioral sciences may be able to help isolate and measure characteristics associated with the bearing of risk so that these can be related to other managerial qualities.

Two questions are involved in considering management as related to risk bearing. First, is there a correlation between managerial success and the desire to assume risk? Second, if such a correlation exists, is the successful manager inclined to take excessive risks--to gamble?

Considerable experimental work indicates that people who perform well as managers, those with high n Achievement, like working under conditions of moderate uncertainty where they can utilize their ingenuity and skills to help determine the outcome. By taking but little chance they may assure success, but obtain little achievement satisfaction. On the other hand, by taking too much chance they are not only less likely to succeed but more likely to regard success as "luck." (5, p. 211)

The answer to the second question has already been implied. Findings thus far indicate that subjects with high n Achievement prefer situations involving

4/ In considering the bearing of risk it may be well to note that where management and ownership are separated the ultimate bearer of risk probably is ownership. Management may bear the risk of losing his job if losses are excessive, but this does not relieve owners of the final risk. In this connection the term entrepreneur may have an advantage over the term management. However, as was pointed out above, behavioral science studies indicate managers are motivated by drives to accomplish their goals--which apparently are not related to money. Thus, the ownership aspect of entrepreneurship appears to have little significance in this context, leaving the managerial aspects for primary consideration.

moderate risk, and then "...only when they have some chance of influencing the outcome through their own skills and abilities. In games of pure chance they normally prefer the safest odds they can get." (5, p. 214)

Conclusion

Indications are that the behavioral sciences can make a significant contribution to farm business management. Considerable information regarding "physical" characteristics of soils, crops, livestock, feed, etc., is available and can be used in management decisions. However, relatively little is known about the "human" characteristics of management and labor. Prospects appear good that the behavioral sciences can help (a) develop quantatitive data and tests which will facilitate identifying potentially successful managers, (b) indicate the type of training which might improve management, (c) provide patterns of organization which may be useful as guides in organizing the farm business, and (d) provide clues to handling and motivating employees.

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