FORUM

ALLOCATIVE ABILITY AND FARM MANAGEMENT A COMMENT

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In a recent article in this *Review*, Menz and Longworth [10] discuss the applicability of the concept of "allocative ability" to farm management. The main points of their article would appear to be fourfold:

(1) Farm planning models developed by agricultural economists are seldom used by farmers, mainly because the models cannot handle adjustment in response to information feed-back. That is, record-keeping procedures are poorly integrated with decision-making procedures.

(2) "The most important reason why very few farmers maintain adequate (in a managerial sense) records is because they do not have the necessary data handling skills to make use of the recorded information for better decision-making" [10, p. 204].

(3) A person's ability to link record-keeping to on-going decision-making is taken to be his "allocative ability". Allocative ability has been defined as "the human agent's ability to acquire, decode and sort market and technical information efficiently" [7, p. 85].

(4) "Allocative ability can be enhanced by education related to the acquisition and manipulation of data and by specific data processing techniques" [1][10, p. 205].

The present article takes issue with a number of the views expressed by Menz and Longworth [10]. Firstly, it is contended that "allocative ability" is an ambiguous term insofar as it is inadequately related to relevant psychological concepts. I wish to emphasise the importance of intelligence; if intelligence and allocative ability are not one and the same, then intelligence would appear to be a major determinant of "allocative ability". Secondly, by introducing this factor of intelligence into the discussion of allocative ability, there are grounds for suggesting that the role of education generally and of extension in farm business management

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[1] From a reading of literature related to allocative ability, this hypothesis appears to stem from the work of Nelson and Phelps [12]. This point is important to later discussion.

in particular, have been overstated; it is hypothesized that a farmer's intelligence sets a broadly defined constraint to the complexity of decision-making that he is able to undertake. It is therefore hypothesised that a farmer's intelligence sets a broadly defined[2] upper limit to the level of allocative ability he can attain.

Is "Allocative Ability" Intelligence?

What Menz and Longworth, and other economists before them, have called allocative ability is similar to the attribute which some psychologists would call intelligence. For example, the attribute considered to be measured by one intelligence test, *Raven's Standard Progressive Matrices* (1938), is defined as:

> "a person's capacity at the time of the test to apprehend meaningless figures presented for his observation, see the relations between them, conceive the nature of the figure completing each system of relations presented, and, by so doing, develop a systematic method of reasoning" [1, p. 3].

This particular definition of intelligence is very similar to the definition of allocative ability. Both definitions are presented in terms of a person's ability (capacity) to receive, decode and use or make decisions upon available information.[3]

Thus, there are firm grounds for suggesting that allocative ability and intelligence (as defined) may be one and the same. Alternatively, allocative ability might be redefined along such lines as knowledge of, and skill in using, farm business management techniques. However, even if allocative ability is so redefined, it appears that a person's intelligence will be a major determinant of his allocative ability.

Intelligence and Education

The hypothesized strong relationship between intelligence and allocative ability leads me to consider the effect of education on intelligence and the effect of intelligence on educational achievement. Three points are made. Firstly, Raven's Matrices is regarded as a relatively education-free test [3, p. 363; 9, p. 236]. That is, a subject's performance on the test is regarded as being not significantly influenced by culture or education. This is not necessarily the case for all intelligence tests and for the abilities measured by those other tests (see Jensen [9, p. 236]).

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[2] The emphasis that is given here to intelligence as a determinant of behaviour does not imply it is the only significant human attribute. At least some attributes (e.g., motivation and intelligence) are interactive as determinants of behaviour. For this reason, one human attribute cannot be considered to be a limiting factor in the more precise way that physical factors such as land area can be.

[3] It is recognized that there are many definitions and measures of intelligence, and that somewhat different abilities are measured by the different tests. Jensen provides a comparative interpretation of the abilities measured by some tests [8, p. 236]; he considers Raven's Matrices to emphasize conceptual or abstract learning ability rather than *X*, Rote learning ability; such an emphasis makes the test more suitable rather than less suitable to the thesis of this article.

Secondly, psychological research has shown the level of intelligence of a mature adult to be relatively enduring; that is, it is not significantly changed by education/experience during adult life. (See Fleishman and Bartlett [6, p. 368]).

Thirdly, there are good grounds for hypothesizing that a person's intelligence sets a broadly defined upper limit to the achievements he can make.[4]

This was recognized by Emery and Oeser in their study of communication in agriculture—

> ". . ., no amount of teaching will enable anyone of average intelligence to become a great innovator, or not to make more mistakes in complex operations than someone of high intelligence. There are limits beyond which human intellectual capacities cannot be expanded . . ." [5, p. 82].

Thus, in considering intelligence as a determinant of the behaviour of adults it is considered most appropriate to assume that intelligence is relatively fixed and that a person's intelligence sets a broad upper limit to his potential achievement.

Intelligence, Education and Farming Achievement

The immediate significance of preceding discussion is an apparent conflict with the unqualified assertion that education can enhance allocative ability. Nelson and Phelps [12] assumed education influences allocative ability on the evidence of research into the adoption of innovations. From the observed correlation that "early adopters have more years of education than do late adopters" (Rogers and Shoemaker [14, p. 186]) Nelson and Phelps concluded:

> ". . . It is clear that the farmer with a relatively high level of education has tended to adopt productive innovations earlier than the farmer with relatively little education. We submit that this is because the greater education of the more educated farmer has increased his ability to understand and evaluate the information on new products and processes disseminated by [various agencies and media] . . ." [12, p. 170].

Relative to this reasoning, the evidence relating education to early adoption is not unequivocal. Rogers and Shoemaker reference 277 relevant studies; 205 (or 74 per cent) support it; 72 (or 26 per cent) do not support it [14, p. 354].

Secondly, and more important, the causal inference made by Nelson and Phelps may be incorrect. Another hypothesis of the relationship between education and innovation adoption could be as follows: because the more intelligent tend to remain longer in the process of formal education,

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[4] The theoretical foundation for this hypothesis is to be found in the results of experiment psychology on conceptual behaviour in humans. Bourne [2, pp. 89–92] gives a brief summary of the results of research relating intelligence to conceptual behaviour.

the relationship of education to innovativeness (or, in our case, to adaptability to economic changes) is then significantly, though not wholly, a relationship between intelligence and innovativeness. As some support for this hypothesis, Rogers and Shoemaker note that "earlier adopters have greater intelligence than late adopters" [14, p. 188]; although they reference only five studies related to this correlation, all studies support it ([14, p. 365].

The Role of Extension and Education in Farm Management

The act of managing a farm can be regarded as a process. Farm planning models are techniques or procedures which reflect an assumed structure of that process or of part of that process.

Against this perspective, the contribution of Menz and Longworth may be seen as an attempt tc suggest changes in both the content and the method of advice that will lead to more effective extension/educational programmes in farm business management. They have asserted that there is need for models (techniques or procedures) which are better adapted to the reality of a farm manager's managerial situation; they have suggested that the teaching programmes need to be devised so that the farmer gets more practice/experience in handling data as he learns the techniques.

As generalizations, I have no disagreement with these suggestions. However, what concerns me is that they may be interpreted in such a way as to imply the following assumptions which it has been argued are false. The first is that knowledge of a procedure (such as a farm business management technique) is the only necessary human input to performance in conducting the process (i.e., managing the farm). The second is that there is no necessary limit to what can be achieved by education of the individual, provided, of course, that adequate educational resources are available.

In the development of better extension/educational programmes in farm business management, there is need to be mindful, among other things, of the relative fixity of an adult person's intelligence and of the constraining effect of intelligence on achievement. (In comparison to the population at large in which intelligence is a normally distributed attribute, it is worth noting that economists who develop formal farm planning models are mostly in the top 10–15 per cent of the population with respect to intelligence.)

There is need to accept that farm businesses differ in complexity. A farm business increases in complexity as it is developed and as production activity is intensified; more factors are involved in given decisions, and outcomes are increasingly probabilistic and subject to a wider range of uncontrolled factors (i.e. influences originating in the environment of the farm system). This suggests that technology (farm practices, innovations) associated with higher levels of farm development will only be used by farmers of higher intelligence (and other attributes). In a recent study on the impact of management on farm expansion and survival, Musser and White [11] came to comparable conclusions. They concluded that

farmers of high managerial ability would have no trouble surviving in agriculture; given the right financial conditions, they would even expand. However, under the conditions of their farm model, Musser and White concluded that farmers of low managerial ability would not expand in the foreseeable future; their decision strategies need to be geared to survival. Thus, it is contended, farm business management techniques that are extended to farmers for their use ought to be consistent with these points of view. I would qualify Menz and Longworth's implications as follows: I agree with Menz and Longworth that there is need for farm planning models that are more relevant to farmers. However, this does not necessarily imply a need to develop farm planning/farm record-keeping models that are more sophisticated and more complex. As farmers have different levels of intellectual capacity, there is need for a range of models. Indeed, I suggest that there are many farmers whose intellectual capacity and other attributes are such that they are not going to significantly benefit from attempts to teach them decision making/record-keeping procedures that are different to those they now use.

Further, on this theme of adapting the content of extension/education to the learner, there should always be consideration of the possibility that more may be achieved (by a given teacher and a given learner) from concentrating on agricultural technology rather than on farm business management. This possibility has previously been raised by others. For example, Crouch stated:

> ". . ., more will be gained by encouraging woolgrowers in the Yass River Valley to systematically adopt basic pasture and disease practices rather than by trying to introduce detailed farm management techniques" [4, p. 545].

In Conclusion

The concept of allocative ability does not have established links to other determinants of behaviour. Its possible relationship to intelligence has been considered in this article; as a result, it is considered that inferences drawn about the potential for education to increase both allocative ability and farmer use of data handling techniques may be overstated.

In more general terms this conclusion may be seen as evidence supporting the case for multi-disciplinary research. However, recorded opinions and experience have indicated that multi-disciplinary research is not easily achieved (see Johnson [9, p. 182]).

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