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Management information in Italy

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The diffusion of management information among Italian farms is a fairly recent phenomenon which still affects only a few farms, although there are many signs that we are now on the verge of a vigorous expansion of activity. It is, however, impossible fully to understand the problem which arises in this sector without a clear idea of the structural situation of Italian agriculture, about which I think it necessary to say something straight away.

The 1961 Census revealed the existence of a total of more than 4.2 million farms, of which 3.3 million had an area of less than 5 hectares and some 1.4 million did not even reach 1 hectare.

With an area of agricultural land far below that of France and about equal to that of the Federal Republic of Germany, Italy thus finds itself with a very large number of farms (even greater than the figure for the whole of the E.E.C.) the vast majority of which are small or very small, and where the main problem is the survival of the peasants whose income is consequently fairly low.

The marked rural exodus caused by Italian industrial development has, however, considerably reduced the numbers engaged in agriculture (who, immediately after the Second World War, were still about 43 % of the total population), although they still constitute a high proportion (more than 20 %) of the national total.

The reduction in the numbers employed in agriculture has been matched by a certain fall in the number of farms, which—according to a survey of the structure of the E.E.C. countries made in 1967—amounted at that date to 3.8 million, a fall of about 400,000 compared with 1961.

In recent years there has therefore been a noticeable lessening of population pressure in the countryside, although it is still very high compared to that of the more industrialized countries; similarly, although there has been some improvement in the situation, there are still far too many farms with an area so small that it precludes any satisfactory economic activity.

If we add to this adverse structural situation the fairly low level of education and vocational training existing in the countryside, it is understandable that the problems of farm management according to rational economic principles and with modern technology applied in the right way, and therefore the problems of developing a management information activity, have been recognized—at any rate up to the past decade—only by a few people.

We have to go back to about 1960 to find the first initiatives designed, still on an experimental scale, but systematically, to bring home to the farmers the subjects of accountancy assistance and management.

Underlying these initiatives was the need felt to adapt technical assistance in Italy to the new needs which had arisen as a result of rapid economic development. This development, in fact, by generating the most radical changes which have ever taken place in Italian agriculture, involved the need to move on from a more primitive phase of the predominantly technical formulation of problems—which was that then prevailing in the country—to that of their integration in an economic and sociological perspective. The farmer's problem was no longer to produce as much as possible, regardless of cost—which was what used to happen in practice—but to produce and sell high quality products at competitive prices.

Assistance to farmers, therefore, while maintaining its traditional efforts directed towards improving productive techniques, had to be reorganized and reconstructed on the basis of strict economic and sociological principles, so as to make farm management and the marketing

of products the focal point of the whole activity of public and private assistance to farmers.

To achieve this goal a long and intensive experimentation was necessary into the most appropriate methods, procedures and forms of organization.

This activity was substantially started around 1960 at Portici in the Agricultural Economics Specialization and Research Centre for the South of the University of Naples, and subsequently at Bologna in the Institute of Valuation and Agricultural Accounting of that University.

The two initiatives originated and developed on the basis of substantially different initial approaches and followed substantially different methods, even if, with the lapse of time, this diversity has become less and they now have a number of points in common.

At Bologna, in the context of a University Institute whose institutional tasks included accountancy, through the personal effort of a teacher of outstanding quality and very closely in touch with the agricultural environment, Professor Alessandro Antonietti, the problem was tackled of providing farmers who asked for it with assistance based on synthetic accounting, mainly of the administrative type, leading at the year-end to overall economic accounts and to the calculation of "indexes" or ratios between various business magnitudes, which would allow comparison among farms in a similar situation, and therefore the identification of the more or less efficient sectors within the farm business.

At Portici, as the result of a more marked function of study and stimulus by public action, especially in South Italy, and of the specific orientation towards mathematical economics adopted by the Agricultural Economics Specialization and Research Centre for the South, (2), the problem was visualized on

(2) The Agricultural Economics Specialization and Research Centre for the South, located at Portici and attached to the Faculty of Agriculture, under the direction of Pr. Manlio Rossi Doria, is Italy's major centre for agricultural economic research. Their keen interest in mathematics, statistics and econometrics, and continuous contacts and interchanges with the most advanced universities of the United States and North-West Europe have caused the numerous group of economists working with the Centre to be dubbed "the Napolitan-American School".

the most complex processes of business planning, such as linear and dynamic programming.

Both at Portici and at Bologna the need was soon recognized to base the work on adequate calculating equipment which would allow the benefit of the activity to be extended to a vast number of farms by speeding up and simplifying the varied processing of the many accounting and technical data assembled.

For this reason, an I.B.M. automatic data processing unit was at first installed at Portici with the following equipment :

Electronic computer, 444 A01, with multiplier.

Punch, 029, with scientific keyboard. Verifier 056.

Selector 083, 60,000 cards per hour. Reproducer 514.

This data processing unit was subsequently replaced by a 16 K I.B.M. 1130 electronic computer with direct access interchangeable magnetic discs, with 1132 reader, card punch and printer.

At Bologna, on the contrary, after a long period of work with the I.B.M. Service Centre, a type 1401 I.B.M. electronic computer was hired (5).

These two initiatives have gradually become well established and well known, arousing growing interest among farmers, civil servants, students and technicians. The Ministry of Agriculture, in particular, has recognised the need, in order to promote the country's agricultural development, to encourage and finance the initiatives which, on the model of those cited above, have developed in Italy, thus giving a vigorous impetus to the activity of management information and assistance for farmers (6).

The University, too, has shown a growing interest in the scientific and methodological aspects of mechanized account-

(5) Pr. Franco Alvisi and Dr. Bregoli have been particularly concerned with problems connected with the computerization of farm accounts.

(6) The successive Ministers of Agriculture during these years, Ferrari Aggradi, Restivo and Sedati, especially the latter, and their direct associates in Rome, and the Divisional Inspectors of Agriculture, have always supported the diffusion of initiative.

a vaster scale, that is to say, in the light of a complete reform of the Italian assistance services (3) and the elaboration of more generalized management advice leading to programmed management.

a) For this reason, Portici, has been concerned with : identifying the most suitable structures and forms of organization for providing effective management assistance at the level of the farmers and determining how effective coordination can be achieved between the various public initiatives and those of a private nature ;

b) working out a system of analytical accounting extended to include the recording of physical facts and the use of the factors of production within the farm, so as to arrive—in addition to the normal results of administrative accounting—at the determination of technical coefficients and the gross return on each individual productive activity ;

c) analysing separately the problems of small farms and those of medium and large farms so as to define the methodology of analysis and the most appropriate form of action in each case.

In the first case (4) in practice, the best results are obtained through the analysis of the comparative efficiency of homogeneous groups of farms and the successive application of procedures such as programme planning, while in the second case the analysis, starting from the complete and detailed recording already referred to is centred on individual activities and proceeds direct to

(3) In Italy technical assistance is, in the great majority, in the hands of public bodies. The number of agencies responsible for such tasks is, however, fairly high (the Ministry for Agriculture and Forestry, the Fund for the South, the Agricultural Development Corporation, the Agricultural Assessors, etc.) and there is generally no effective coordination among the various initiatives. The farmers' organisations themselves also carry on a certain activity in this field, which has gradually increased over time, owing to the greater possibilities of making closer contacts with farmers.

(4) Pr. Michele de Benedictis, Dr. Quirino Paris, Dr. Lucio De Angelis and Dr. Agostino Cembalo have been particularly concerned with the problematics of management assistance to small arable farms.

ing and the technical and economic analysis of farms ; the most dynamic and irreplaceable drive, however is that provided by certain groups of farmers, mostly young and therefore open to innovation, who were the very first to feel the need to approach their activity from an economic angle and who therefore voiced the requirement for adequate information and assistance from a proper management advisory service.

The agricultural organization which merits the praise of having been the first to solicit the interest of scientists and of the State, of having stimulated it throughout these years and having made it possible to begin a practical impression on the countryside is the National Young Farmers' Union (Associazione Nazionale Giovani Agricoltori, A.N.G.A.) (7) which in 1962 constituted at Portici, in cooperation with the Agricultural Economics Specialization and Research Centre for the South, the first Experimental Centre for Farm Management and Accounting (8).

More recently, the other Italian young farmers' organization, the Federation of 3 P Clubs, dynamically guided by Dr. Sandra, Dr. Manticone and Dr. Tirelli, has assumed the task of circulating among young cultivators the principles of accountancy information and management.

In this way management and accountancy centres are springing up, slowly but surely, all over the country, which, while displaying some special features owing to the various conditions in which they have to operate, all derive their structure and their data compilation and processing procedure from the scientific and prac-

(7) The origin and first dissemination of assistance in farm management is particularly linked with the names of four top representatives of A.N.G.A., namely Alfredo Diana, President, and Rinaldo Chidichimo, National Secretary of A.N.G.A., and Mario Daniele and Pier Giorgio Ortis, who succeeded them in those offices a few years ago.

(8) The direction of the Portici Management Centre, in the hands of Dr. Bartolelli from 1962 to the end of 1969, has now been handed over to Dr. Franco Bruni, Deputy Director during the previous period.

tical experiments carried out at Portici and at Bologna.

A.N.G.A., on the one side, following the Management Centre founded with the Specialization Centre at Portici, has constituted, in cooperation with the appropriate Universities, a Management Centre at Padua (9), one at Parma (10), one shortly to be opened at Turin (11), in cooperation with an Agricultural Technical Institute, a Centre at Codogno (12) in collaboration with the Federation of Cooperatives, a specialized centre for accountancy information for cooperatives in the Aemilia Region (13), and, finally, in order to coordinate this activity and constantly encourage its development, has set up, in agreement with the General Confederation of Agriculture, the Centre for the Coordination of Accountancy and Management, with headquarters in Rome.

The Federation of 3 P Clubs, for its part, has cooperated with the Institute of Valuation and Accountancy at Bologna and has encouraged the creation, attached to the Roman Catholic University of the Sacred Heart at Piacenza, of a Management and Accountancy Centre under the direction of Pr. Giovanni Galizzi.

All these initiatives—which at present affect a total of about 2,000 farms—have a semi-public, or, if it is preferred, semi-private, character; in practice, they stem from agreements between farmers and the universities, with a financial contribution from the State which is fully justified in the light of the outstanding public value of the management information service thus initiated.

To this must be added—and given a

(9) Directed by Pr. Ottone Ferro, Pr. of Valuation, University of Padua.

(10) Directed by Pr. Fausto Cantarelli, Visiting Professor of Animal Husbandry, University of Parma.

(11) Directed by Pr. Alfredo Panerai, Professor of Agricultural Economics, University of Turin.

(12) Directed by Pr. Marco Sibani, lecturer in Agricultural Economics at the local Agrarian Institute.

(13) Under the direction of a Board of Governors of four members.

specially prominent place—an initiative of a purely public character, both in its sponsorship and in its financing, which has given a great impetus to the diffusion of accountancy information in Italy, namely that taken by the National Institute of Agricultural Economics (Istituto Nazionale di Economia Agraria, I.N.E.A.) (14).

This Institute, assigned by the Italian State the task of organizing the agricultural accounts networks set up by the E.E.C., deemed it necessary to organize its own work in such a way as not to limit itself to compiling the accounting data to be sent to the Community at Brussels, but to give a wider development to agricultural economic research and the use of accounting data by making effective suggestions to farmers.

The I.N.E.A. has therefore founded 13 Regional Accounting Offices, covering a total of about 4,300 farms, a Central Accounts Office (15) and a Processing Office equipped with an I.B.M. 36/20 electronic computer (16).

The methods of compilation and processing are substantially the same as those worked out at Portici so far as they relate to business accounting and analysis for management purposes, while they differ as regards the compilation of farm data cards which the E.E.C. requires at the end of each year (in order to have reliable and objective data as a basis for the forecasts of the Community agricultural policy), the completion of which in accordance with Community regulations is the main task of the I.N.E.A.

It will be seen from the foregoing that the development of management information is still fairly recent; it was set in motion by the initiative of a few far-sighted individuals and it has developed gradually until it now affects, through public and private initiatives combined, some thousands of farms.

(14) I.N.E.A. was founded in 1928, and the present Chairman is Pr. Mario Bandini, with Dr. Ugo Pesce as Secretary-General.

(15) Under the direction of Dr. Vittorio Pignani.

(16) Dr. Giulio Adilardi, joint author of the following article is in charge of these Centres.

When we remember the total number of farms in Italy, we might perhaps be discouraged to think how much still remains to be done; there are, however, three encouraging features.

The first is that a great many small and very small farms—which can be described as small holdings or allotments rather than farms—are doomed to disappear in the course of the next few years, either by incorporation in larger farms, or by ceasing to be used for agricultural purposes.

The second is that the management centres and accountancy offices referred to above have all (with the exception of Bologna and Portici) sprung up in the last three years and at a gradually increasing pace, from which it can be assumed that there will be further vigorous expansion in the near future.

The third encouraging feature is the fact that the Ministry of Agriculture and Forestry, in giving directives for the assistance programme which its local offices should follow in 1970 in favour of farmers, has for the first time singled out accounting information and management analysis as the basis for the definition of this assistance action.

This fact will, in time, acquire considerable importance in so far as the penetration of the Ministry's local offices is fairly good, provided of course that solutions can be found for the problems of personnel training and the provision of adequate electronic computer facilities.

Having thus briefly examined the development of management information activities in Italy, we should now say something about ways and means. We shall do this in very summary fashion, both in order to avoid overloading this paper and because the following article, by Adilardi and Bruno, clears up a number of points of procedure.

a. *Data Compilation.* The data are compiled at the level of individual farms (except in the case of specialized inquiries into specific subjects). They may relate to dealings between the farm and the rest of the world (purchases, sales, etc.) or to facts internal to the farm itself

(e.g. use of factors of production). The sources used are the invoice for facts in the first category, and the records of machinery, manpower, stocks, crops etc. for the second category. These sources can generally be used direct for card punching once the farmer has recorded the various facts and sent the forms duly completed to the accounting centre (usually every month).

b. *Codification of data.* For the purposes of automatic processing, the data must be codified, i.e. they must be given numbers which have the same significance for the machine as the alphabetical descriptions used in everyday life (e.g. 032 might mean "farm cash in hand"). The codes generally relate to the description of the transaction effected (e.g. sale of two Frisian calves for cash) and the accounts of the farm accounting system relating to the same transaction. Since the accounting system is in practice always the double entry system, the accounting codes are always at least two. The data are codified by the technicians of the Management Centres and Accounts Offices, but as soon as the farmer becomes sufficiently expert it is wise to make him do his own coding; this results in a gain of precision and leaves the technicians more time for management assistance to farmers.

c. *Verification and punching.* The codified data are verified by the technicians and then punched on cards and again verified by an appropriate machine. Various automatic machine checks are also made in the course of processing. The number of cards punched for each farm each year (one card is needed for each elementary datum) ranges from a minimum of 200 up to 16,000 = 18,000, save in exceptional cases.

d. *Processing.* This can be done in a mechanical data processing centre (economically convenient when the data are few and the processing to be done is relatively simple) or in an electronic processing centre; this, in turn, may be on

cards, tapes or discs. The article by Adilardi and Bruni indicates the processing procedure in each case.

e. *Printing.* Normally the Accounts Centre prints, and returns to the farmers, at intervals ranging from one to three or four months, a ledger account and an abstract of accounts on the double entry system. At the end of each financial year the economic and financial accounts are prepared, followed by forecasts for the crop accounts, costs, use of machines, etc. At the level of a group of homogeneous farms in the same neighbourhood indexes of comparative efficiency can then be calculated, obtained direct from the computer; for larger farms, technical coefficients and gross return on individual productive activities are used for the application of more or less simplified business programming procedures (programme planning or linear programming).

f. *Costs.* The service of assistance to farmers rendered by the Management Centres is generally free in the early stages, until its value to farmers can be demonstrated. After this initial period the farmers are asked to make a certain financial contribution to cover that part of the costs which is not borne by the State, which, as already indicated, shares in financing this initiative. This contribution is based, according to the Centre, either on area (500 to 700 lire per hectare, plus a fixed annual sum of 20,000 lire) or at a fixed fee for each transaction recorded during the year (around 35-40 lire per card punched). The activity of the I.N.E.A., on the other hand, being wholly state-supported, involves no cost to the participating farmers, who, however, cannot exceed a certain number.

That is all that can be said about the present situation in Italy with regard to accounting and management assistance for farmers; there is a long way to go, but the prospects are good; accounting is not very widespread, but what there is, is conducted with automatic and electronic data processing centres and therefore with advanced methods and equipment.

There can be no doubt that the 1970's will be decisive for agriculture in Italy and in the Community in many respects; the constitution of an effective management information and assistance service is a priority aim of essential strategic importance which must be pursued with the tenacity and enthusiasm hitherto displayed by the pioneers who have blazed the trail.