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A model for setting up a new department of statistics or biometry in a developing country

P. Dagnelie*

Summary

This papier gives a possible schedule for setting up a department of statistics or biometry in a new teaching institution in a developing country, in cooperation with some older institution. It is mainly based on twelve years' experience of cooperation between a Belgian and a Moroccan agricultural teaching institution.

Résumé

Cet article présente un schéma de constitution d'un service de statistique ou de biométrie dans une nouvelle institution d'enseignement d'un pays en voie de développement, avec la collaboration d'une institution plus ancienne. Il est basé essentiellement sur une expérience de douze années de coopération entre une institution belge et une institution marocaine d'enseignement agronomique.

Introduction

From 1975 to 1986, I had the opportunity to conduct a cooperation project linking a Belgian and a Moroccan agricultural teaching institution (on the one side, the **Faculté des Sciences Agronomiques de l'Etat**, Gembloux, and on the other side, the **Institut Agronomique et Vétérinaire Hassan II**, Rabat), in the field of statistics or biometry (Dagnelie, 1976; Dagnelie *et al.*, 1986). The aim of this project was to set up, under the auspices of the Belgian Agency for Cooperation with Developing Countries (1), a new department at the Hassan II Institute, in Rabat.

Drawing on the experience gathered during these twelve years of cooperation, I suggest a possible schedule for realizing such an aim in some given conditions.

The given conditions

I will consider, on the one side, a rather old institution (say institution O, for "Old"), having a quite strong department of statistics or biometry, and on the other side, a rather young or a new institution (say institution N, for "New"), without any department of statistics or biometry. Institution N is settled in some developing country (in our experience, Morocco), when O could be either in a developed country (in our experience, Belgium), or in a developing country.

Institution O is supposed to be in charge of setting up a new department of statistics or biometry in institution N, under the auspices of a given funding agency (in our experience, the Belgian Agency for Cooperation with Developing Countries). I will consider the problem in the field of statistics applied to agriculture, but it could probably be transposed quite easily to some other fields, including for instance statistics applied to medicine or veterinary sciences.

I will also assume that, in both institutions (N and O), the students get a general degree in agriculture after a four-year curriculum, having then the opportunity to graduate further in some specific fields (including statistics or biometry) after another two-year curriculum. But there might well be some deviation from this assumption (in our experience, we had five plus one year on the one side, and four plus two years on the other side).

The possible schedule

The proposed schedule will be presented in two different ways. The first one will consider successive years each after another; the second will be a tabular presentation of **minimum** personnel requirements (table 1).

Year 0

A professor, expected to be the project manager, and a lecturer of institution O spend a few weeks or even a couple of months in institution N, giving there a first set of lectures, having contacts with local authorities, and making plans for the coming years.

Year 1 (2)

Two lecturers of institution O, or other especially appointed qualified persons, visit institution N and teach there during the whole year, and two or three

* Chaire de Statistique, Faculté des Sciences Agronomiques de l'Etat, 5800 Gembloux (Belgique).

(1) Administration Générale (belge) de la Coopération au Développement (A.G.C.D.).

(2) Because of administrative and/or financial difficulties, there might be a gap between year 0 and year 1

TABLE 1
Minimum personnel requirements.

Years	0	1	2	3	4	5	6	7	8	9	10	11	12
Visiting professors or lecturers from institution O in institution N	2	2	2	2	2	2	2	2	2	2	2	2	2
Permanent lecturers from institution O in institution N	—	2	2	2	2	2	2	2	2	2	1	1	—
Postgraduate students from institution N in institution O	—	—	2	4	4	4	4	4	4	4	4	4	4
Total number of postgraduate students having graduated in statistics or biometry	—	—	—	—	2	4	6	8	10	12	14	16	18
Local young lecturers appointed in institution N	—	—	—	—	1	1	2	2	3	3	4	4	5
Young lecturers of institution N as PhD student in institution O	—	—	—	—	—	—	—	1	1	2	2	2	2
Local staff members with PhD degree in institution N	—	—	—	—	—	—	—	—	—	—	1	1	2
Local clerical staff members appointed in institution N	—	—	1	1	1	1	2	2	2	2	2	2	2

professors and lecturers of institution O (including the project manager) visit institution N as short-term visiting professors. Computing facilities (calculators and, possibly, microcomputers), as well as books, are provided to the permanent staff members, for their own needs, as well as to fullfil the teaching needs. Subscriptions to some journals are taken.

At the end of year 1, two or three students graduating in agriculture in institution N are selected to spend the two following years in institution O, to get a special training and a postgraduate degree in statistics or biometry.

Year 2

See year 1.

Moreover, as far as possible, some consulting is added to the usual teaching activities, and some local clerical help should be given to the permanent personnel.

Year 3

See preceding years.

The postgraduate students selected at the end of year 1 are normally coming to the end of their studies in institution O. One of them can perhaps be selected to start working as lecturer in institution N, from year 4 onwards.

In our experience, the postgraduate students from institution N who visit institution O graduate in institution N (i.e. in their own institution). Institution O is, in some way, working as a section or a subcontractor of institution N, organizing the teaching and examinations, and sending marks and assessments to institution N, which awards the degrees or diplomas. This seems very useful to avoid any difficulty concerning equivalence between foreign degrees or diplomas, and to ensure that institution N students will return to and work in their own country after their studies.

Years 4 to 6

See preceding years.

A second and maybe a third local lecturer should be appointed as soon as possible in institution N, among those persons having spent two years in institution O.

At this stage, the new department should be fully responsible for the whole required teaching (mathematical and applied statistics, biometry, experimental design, and possibly computer science), for consulting, and if necessary, for some computing. The visiting professors no longer give formal lectures or courses, but give seminars and special public lectures, help in consulting, and undertake the growing coordination responsibilities. The local clerical staff should consist of at least two persons.

Years 7 to 9

See preceding years.

A third or a fourth local lecturer is appointed in institution N according to the same procedure.

As soon as possible, at first one and later another of these local lecturers of institution N return to institution O, as PhD students, after having taught at least two years in their own institution. They could stay for instance, every year, for a term of four months, teaching in their own institution, and for eight months in institution O, going further in their research work. They could obviously consider problems arising in or specific to their own country, but it is expected that they would be unable to spend enough time doing research in their country, due to the heaviness of the teaching and consulting tasks in the young growing department.

Years 10 and 11

The situation could be the following (see **minimum** personnel requirements in table 1):

— two visiting professors or lecturers from institution O (including the project manager) still spend a few weeks every year in institution N;

— the permanent staff from institution O staying in institution N is reduced to a single lecturer;

— two or three students graduating in institution N are still selected every year to spend the two following years in institution O, as postgraduate students;

— at least 15 to 20 of these students have already graduated;

— at least 4 of them have been appointed as lecturers in institution N;

— at least one of them has already got his PhD and another is a PhD student;

— the clerical staff of the new department consists of at least two persons;

— computing facilities, books and journals are still provided.

Years 12 and following

The permanent personnel of the young department of institution N are now entirely local, and the responsibilities for all activities (teaching, consulting, etc.) are entirely assumed locally.

Nevertheless, institution O should still give some help to institution N, by sending short-term visiting professors or lecturers to institution N, by receiving postgraduate and PhD students from institution N, and maybe also by means of some logistic support (for instance ordering and sending books and journals, which are not always easy to buy in developing countries, due to currency and exchange problems).

Some comments and conclusions

One of the main features of the above schedule is probably its quite long duration. Obviously, this schedule could be changed, but anyway it would be very difficult to complete in less than ten years.

Another feature is the importance of the required resources (mainly human resources). Here again, some changes could be made, but any important reduction of resources would probably not be feasible.

Altogether, according to table 1, the main cooperation period (years 1 to 11) requires a minimum of 22 short-term visits, 20 years of work by lecturers of the helping institution in the helped one, 19 years of appointments of local lecturers in the helped institution, 46 years of fellowships awarded to postgraduate and PhD students of the helped institution to stay in the helping one, and 16 years of work by clerical staff members, that is to say a total of about 100 man- or woman-years.

This is the price that should be paid for setting up the new department. Moreover, provision should be made for the whole logistic supply (computing facilities, books, journals, etc.).

But other conditions are necessary for success in such a venture, including for instance a good trust between the authorities of both institutions and of the supporting agency, a good understanding between all staff members, in spite of social, cultural and maybe language differences, a good administrative and logistic support in both institutions, ... and much devotion and perseverance as well.

But, if such a project finally succeeds, it is also a great achievement for both institutions, and a unique experience for all those who were involved in it.

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P. Dagnelie, Belge, Ingénieur Agronome A.I.Gx et Docteur en Sciences Agronomiques - Professeur à la Chaire de Statistique de la Faculté des Sciences Agronomiques de l'Etat - B-5800 Gembloux - Responsable du Département de Mathématiques Appliquées de l'Institut Agronomique et Vétérinaire Hassan II, à Rabat (Maroc).