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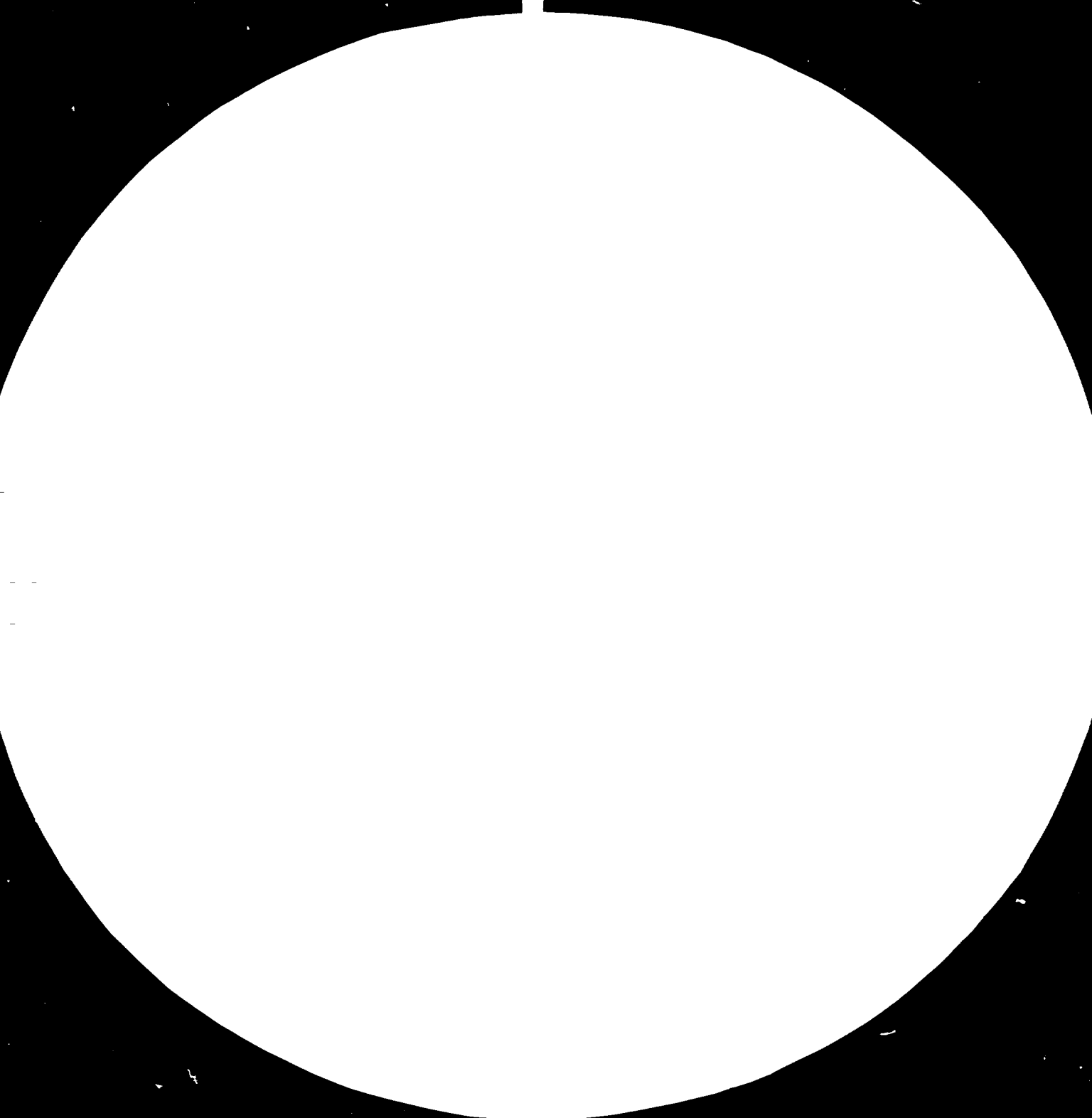




Figure 1. Resolution test targets used to determine the resolution of the system. The resolution of the system is defined as the resolution of the target that is just resolved.

RESTRICTED

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19 July 1982
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STRENGTHENING OF THE TECHNOLOGY
TRANSFER BOARD OF THE MINISTRY OF INDUSTRY

DP/PHI/78/008

PHILIPPINES

Technical report: The establishment of an over-all information system
designed to gather and analyse data on technology transfer contracts*

(follow-up mission)

Prepared for the Government of the Philippines
by the United Nations Industrial Development Organization,
acting as executing agency for the United Nations Development Programme

Based on the work of V. Corado-Simões,
expert in technology transfer information

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ABSTRACT

The mission has been carried out in the framework of a project aiming at the "Strengthening of the Technology Transfer Board of the Ministry of Industry" (DP/PHI/78/008), and was the follow-up of a previous mission accomplished last year*. The objectives of this one-month mission included the assessment of the implementation of the overall information system and the analysis of the requirements for monitoring activity. The information system is not fully implemented yet, but the work performed in that field has been generally successful; some improvements have been introduced in contract cards to adapt it to the new evaluation system as the result of another mission carried out under the same project.

With regard to monitoring, various modifications were recommended with the aim of improving the rate of reply to the forms for annual progress reports and its contents, as well as the monitoring reports. Full implementation of the information system is strongly recommended as a way of enabling a higher efficiency in the performance of TTB activity. A selection of contracts to be subject to monitoring was proposed, since annual monitoring of all contracts is neither feasible nor advisable; criteria for the selection of contracts includes, inter alia, the projected value of payments, specific conditions set by the Board, and sector relevance. Computerization is believed to be an essential factor for the upgrading of information analysis and evaluation procedures, and is therefore vigorously recommended.

* DP/ID/SER.A/365 of 29 October 1981 refers.

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INTRODUCTION

Background

This mission has been carried out as part of a project aimed at the strengthening of the Technology Transfer Board of the Ministry of Industry (TTB), and is the follow-up of a previous three-month mission that took place last year.

The activities performed so far under the project include, besides the expert's missions referred to above, a study tour by two teams of TTB and technical staff, and a one-and-a-half month mission of the technology transfer organization expert, Mr V.R.S. Arni.

The previous mission of the technology transfer information expert has resulted in the definition of a comprehensive information system for the collection and analysis of the relevant data on technology transfer contracts. A summary of the work performed can be found in the technical report of that mission (DP/ID/SER.A/365).

Objectives

The main objective of the present mission was to follow-up on the implementation of the information system previously designed, assess the results of the experience gathered from its operation, and suggest improvements required thereby; in particular the information system should also incorporate the data required for new evaluation procedures established from the mission of the technology transfer organization expert.

Another relevant objective was the analysis of the requirements for monitoring activities, since this issue did not receive an in-depth study in the first mission, and the need for monitoring is increasing, namely in connection with the evaluation of requests for renewal of contracts already registered by the TTB.

RECOMMENDATIONS

On the basis of the work performed on the two missions and of exchanges of views with TTB and technical staff, the following recommendations are drawn with the aim of improving the information system and thereby increasing the quality of contract evaluation:

(a) The information system previously designed must be fully implemented, especially on what concerns contract cards and product cards. Indeed, contract cards are a basic tool for the collection of information on technology transfer agreements, since they allow for the storage of all relevant data on the text of the contract and also quantitative projections utilized in the evaluation. Product cards enable the comparison of the main terms and conditions of contracts registered concerning similar products.

(b) The filling up of contract cards of agreements already registered must be performed by personnel not currently in charge of evaluation. It is recommended that the new staff member recently engaged (and possibly another to be engaged soon), should be in charge of this work. This procedure entails three advantages:

- (i) avoids the loading of actual staff with extra work;
- (ii) provides an excellent basis for training of new personnel and to introduce them to the job;
- (iii) ensures a higher degree of uniformity in the filling of cards.

(c) However, the filling up of cards of agreements currently under evaluation should be handled by staff members in charge of evaluation and must be performed in a systematic way.

(d) The elaboration of statistical reports should be developed along the lines set up in Annex IV of the report of the previous mission (DP/ID/SER.A/365) although referring only to the first priority statistical tables, since manual handling of statistics takes a long time. The contents of statistics reports should be enlarged as soon as computer facilities become available.

(e) The starting of systematic monitoring activities should take place next year. It is suggested that a selection of contracts should be done in order to enable effective monitoring. Analysis of the performance of most agreements not systematically monitored will, nevertheless, take place when applications for renewal are submitted to TTB.

(f) Information linkages with other bodies outside of the Ministry of Trade and Industry, especially with the Central Bank, should be improved. A close relationship with the Central Bank is required for an appropriate checking of the compliance of royalty remittances with the terms and conditions set by the Board, namely regarding the definition of net sales (such a control is supposed to be performed by the Central Bank), and for the supply of data on foreign exchange outflows due to technology transfer agreements.

(g) Finally, computerization would be an essential requirement for the upgrading of the work performed by TTB, either regarding evaluation or statistical analyses. It is stressed, however, that computerization is not just the purchase of hardware, it should also include the acquisition of the required software and an adequate training programme for at least two members of the technical staff so that they could handle the current working of the system. Decisions on this issue must be steady and wise, requiring, most probably, some help from a computer specialist to help in drafting the terms of reference and even in the purchase itself.

I. MAIN ACTIVITIES

The main activities performed under this mission have been in accordance with the outline provided in the job description and aimed at the achievement of the objectives referred to above.

Talks with staff members enabled an agreement on the following work schedule:

- (i) General follow-up of the implementation of the information system previously designed, including an analysis of the modifications to be introduced in the contract cards as a result of the new evaluation system proposed by the technology transfer organization expert;
- (ii) Support in the elaboration of a statistical report to the Board, taking into account the suggestions drawn in the previous mission;
- (iii) Analysis of monitoring activities, including the proposal of amendments on the existing forms for collection of data and for monitoring reports.

General follow-up of the implementation of the information system

One of the basic principles of the information system is that the relevant information contained in the text of contracts should be stored in inter-linked cards, which will enable the retrieval of all data required for evaluation follow-up and for statistical purposes. Accordingly, a set of statistical cards has been designed.

Three of them (contract flow card, supplier card, and recipient card) are currently being filled up and no problems have been detected so far. The procedures used are consistent with the suggestions made and it is thought that those cards have proved useful, especially for the permanent checking of the flow of agreements. Given the steady way of implementation, no modifications were recommended in this field.

Contract cards and product cards are not yet implemented. However, they are quite important parts of the overall statistical system and their systematic filling up must start as soon as possible.

Regarding contract cards, some talks have been held with staff personnel and the need for modifications has been felt only on the introduction of ratios required for the application of the new evaluation system designed by Mr V.R.S. Arni. After analysis of the information requirements of the "Manila technique", the addition of two new items to the statistical table of the

contract card has been suggested, to take into account the average values of both technology turnover factor (TTF) and Licensor's share of enterprise's profit (LSEP).⁽¹⁾

Support in the working out of semestral statistical report

The expert has been requested to provide support in the preparation of the semestral statistical report to the Board. Talks held with the staff member in charge of statistical analysis led to the identification of the main steps to perform; they include:

- (a) Filling up of financial data in contract cards.
- (b) Identification of the main features of the agreements, namely technology supplier country, industrial sector, foreign holdings in the recipient country, equity relationship between recipient and supplier, technological items involved, duration, and royalties.
- (c) Working out of statistic tables on financial data and on the main features of the contracts.

Work is currently being performed in accordance with the above schedule and during the mission the expert was also able to discuss and solve the questions raised by the staff concerning the meaning of the various items to consider and its relevance to the perceived objectives of evaluation and statistical procedures.

Monitoring

The need for monitoring increases as requests for renewals are submitted to the Board. Although the first big bunch of renewals is expected only for next year, TTB is already facing the problem of how to evaluate the renewals of registered agreements.

Monitoring has not been an important concern in the first mission, since the short run needs were mostly on the establishment of the overall information system. Time has now come to examine more closely the scope, characteristics and information needed for monitoring.

- (1) TTF is defined as $\frac{\text{net profit before taxes}}{\text{royalties}}$
and LSEP as $\frac{\text{royalties}}{\text{net profit before taxes} + \text{royalties}}$

(See Mr V.R.S. Arni's forthcoming report.)

The main source of data on the performance of contracts are the annual progress reports that firms must complete and send to the TTB; the rate of reply is not high and seems to have decreased in the last year. An analysis of existing forms for annual progress reports has been developed taking into account two main factors:

(a) The need to increase the rate of reply, especially through a more straightforward questionnaire.

(b) The objectives of monitoring, either the close annual monitoring or the one stemming from the requests for renewal.

The main objectives of monitoring have already been identified and include the following:

- (i) Assessment of the compliance of contract performance with the goals of technology transfer policy and the terms and conditions set by the Board.
- (ii) Providing a steady basis for the evaluation of the requests for renewals.
- (iii) Enabling a more adequate and up-to-date knowledge on the real conditions of the inflow of technology in the Philippines and the definition of the corrective policy measures required.

From the examination of existing forms for annual progress reports, a number of suggestions have been made regarding its improvement. These suggestions include the following:

- (a) Working out instructions on filling up forms;
- (b) Request of information for just one year, except for the first year of the agreement;
- (c) Distinction between royalty remittances and royalties due;
- (d) Additional specifications for the questions aimed at the assessment of the absorption of technology;
- (e) Request of general data on the recipient firm, in order to appraise the relevance of the agreement for its overall activities.

A comprehensive paper on this subject has been drafted and discussed with the staff member in charge of monitoring.

With regard to the monitoring report, a paper has also been worked out taking into account the objectives of monitoring, the proposed modifications on the forms for annual progress reports, and the new evaluation procedures

stemming from the technology transfer organization expert's mission.

Since the actual forms for monitoring reports are very comprehensive and deal with the most important issues, the improvements suggested are not very substantial. It should be recalled, however, the relevance of the analysis should be drawn upon the data gathered.

It is thought that the development of an annual monitoring report for each contract would be a heavy burden on the staff and would not be feasible with the available resources. It is suggested therefore that monitoring should be handled in two main (and complementary) ways:

(a) Annual monitoring of the most important or conspicuous contracts and of some of the minor ones (by random sampling). Criteria for selection of the former includes, inter alia, the following: projected amount of royalty payments, specific conditions set by the Board (especially concerning absorption of the technology and utilization of local inputs), connections with the major industrial projects, sectoral relevance, doubts about technological or economic capabilities of licensor and/or licensee to successfully perform their duties under the contract.

(b) Regarding the remaining agreements, close monitoring will only take place when applications for renewal are submitted to the Board.

Computerization will enable a sharp enlargement of monitoring capabilities since the handling of data gathered from forms for annual progress reports will become easier and faster. As a consequence, the number of contracts to be monitored and the depth of monitoring analysis could be substantially increased.

II. ACHIEVEMENT OF OBJECTIVES

Checking the activities developed under this mission with the objectives referred to earlier, it can be said that the latter have been achieved to a considerable extent.

It should be remarked, however, that the scope of follow-up activities has been reduced, since one of the main elements of the information system designed is not yet implemented; indeed, the contract card can be seen as the cornerstone of the information system and it is urged to start its implementation, either for the contracts already registered or for those currently under evaluation. Nevertheless, talks held with members of the staff on this subject allows for a justified expectation that such a task will be carried out in a steady way, without any substantial troubles.

The other cards included in the information system, besides contract and product cards, are already being conscientiously filled up, and experience gathered so far does not point out any need for improvements in the cards.

With regard to monitoring, it seems that the objectives have been fully achieved, given the limited duration of the mission. An in-depth analysis of the existing forms has been carried out and it is believed that the modifications suggested will enable a qualitative and quantitative improvement of the replies of recipient companies and thereby a more accurate monitoring. Furthermore, modifications on monitoring reports, especially the introduction of new items and ratios, are expected to improve the quality of the analysis of performance.

III. FINDINGS

The implementation of a comprehensive information system is more and more needed while the number of registered agreements is continuously growing and the relevant information has to be adequately stored and handled to provide the technical staff with the background data required for a conscientious evaluation of contracts. Furthermore, TTB must be prepared to face a higher staff turnover and not to rely so heavily on personal experience on previous decisions.

Another concern is monitoring. It is an essential supplement of evaluation, since it enables the assessment of the real performance of TTB intervention of the extent of technology absorption and of the effects of the inflow of technology. Contract monitoring should be inserted, in a later stage, in sector monitoring so that the performance of each contract will be checked against sectoral standards.

Effectiveness of monitoring heavily depends on the quantity and quality of replies of companies to progress reports. The forwarding of the forms must be followed by later contacts with the companies in order to ensure a higher rate of reply. In some instances, closer monitoring through plant visits is deemed to be useful.

Computerization will also be an essential factor to improve the capabilities of the TTB, and the purchase of a computer is therefore suggested. Careful examination of facilities available and clear definition of the terms of reference for the purchase must be worked out so that the transition to a computerized handling system would be trouble-free.



