

W A R T A
PENGELOLAAN PENELITIAN DAN PENGEMBANGAN
[R&D MANAGEMENT]

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**WARTA PENGELOLAAN PENELITIAN DAN PENGEMBANGAN
(R & D MANAGEMENT)**

1. Merupakan wadah komunikasi bagi masyarakat ilmuwan, para pengelola penelitian dan pengembangan pada umumnya, dan antar-alumni Widyakarya-Penataran Pengelolaan Penelitian dan Pengembangan pada khususnya.
2. Memuat karangan dan berita mengenai perkembangan pengelolaan penelitian dan pengembangan.
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DAFTAR ISI

KATA PENGANTAR DEWAN REDAKSI

iii

KARANGAN

1. The Need of Industrial Liaison Officers for Research Institutes
By: B.H. Hadiwardjo 1
2. Diffusion of R&D Output to Industry
By: B.H. Hadiwardjo 5

YANG PERLU DIKETAHUI

1. Sistem Pengelolaan Penelitian dan Pengembangan di KAIST
Oleh: Soehartono Soedargo 8

Tulisan dalam "Warta" dapat dikutip dengan menyebutkan sumbernya.

KATA PENGANTAR DEWAN REDAKSI

Warta Volume 4 No. 1B mengemukakan dua tulisan mengenai perlu dikembangkan dan ditingkatkannya hubungan kerjasama yang erat antara lembaga litbang dengan industri. Tulisan pertama mengemukakan tentang perlunya tenaga penghubung atau *liaison-officers* di lembaga litbang, yang secara khusus melakukan hubungan dengan industri. Tenaga khusus ini telah dikembangkan di lingkungan Lembaga Instrumentasi Nasional (LIN) LIPI.

Tulisan kedua mengemukakan pemikiran bagaimana hubungan erat antara lembaga litbang dengan industri itu dapat lebih berhasilguna. Pemikiran pertama ialah adanya badan atau institusi khusus yang dapat membantu industri dengan pengembangan dan penggunaan hasil penelitian dalam produksi dan industri. Pemikiran kedua ialah dengan cara *spin-off*, yaitu dengan membentuk suatu industri dalam bentuk kecil yang secara khusus melakukan pengembangan dan penggunaan hasil penelitian tertentu dalam produksi.

Tulisan dalam rubrik Yang Perlu Diketahui mengemukakan tentang pengelolaan penelitian dan pengembangan di KAIST. Pengetahuan mengenai bagaimana lembaga-lembaga litbang di negara lain melaksanakan pengelolaan-nya akan bermanfaat bagi usaha kita mengembangkan sistem pengelolaan penelitian dan pengembangan yang berdayaguna dan berhasilguna. □

DIFFUSION OF R & D OUTPUT TO INDUSTRY *)

By: B.H. Hadiwardjo **)

SARI KARANGAN

Pada waktu ini terdapat kesenjangan dalam alih teknologi dari lembaga litbang ke industri. Biasanya hasil dari lembaga litbang masih berupa *laboratory prototype* yang masih harus dikembangkan lebih lanjut dan dilengkapi dengan studi kelayakan tekno-ekonomi, sebelum diterapkan dalam industri. Dalam tulisan ini dikemukakan pemikiran mengenai dua cara pendekatan untuk meningkatkan alih teknologi itu. Pendekatan pertama ialah: membentuk atau memberikan tugas khusus kepada suatu lembaga untuk mengembangkan hasil litbang dan melengkapinya dengan studi kelayakan tekno-ekonomi. Pendekatan kedua ialah dengan cara *spin-off*, yaitu membentuk industri dalam bentuk kecil yang secara khusus menerapkan hasil litbang tertentu dalam produksi. Contoh yang dikemukakan ialah dalam bidang instrumentasi.

INTRODUCTION

In achieving the target for industrial development during the Third Five-Year Development Plan, i.e., the conversion of raw materials to semi-finished or finished products, science and technology potential in Indonesia should be developed. Proper selection of technologies for the small and medium scale industries should also take into consideration the industrial environment.

RESEARCH AND DEVELOPMENT AND INDUSTRY

It has been a common observation that an uncontrolled influx of foreign technologies, coming in at a fast rate, creates technological dependence on the part of the recipient. As in other developing nations, Indonesia is no exception. Efforts are taken to minimize this dependence and programmes are being developed to decrease the dependence until Indonesia is self-reliant on the particular technologies. In this respect, industry in Indonesia and research institutes are of the same conviction that foreign technology dependence should be minimized. Industry, on one hand, may need the incoming technologies to stimulate the growth but, on the other hand is cautioned lest the stimulus overwhelms the existing life. The research institutes are again asked to provide ideas to control this influx.

With the rapid technological development, Indonesia as a developing country should absorb the technologies properly which suit to local needs. The research and development activities in Indonesia is to support the national development, so that its output could be directly implemented or utilized. Since funds and manpower are scarce, the research and development

*) Revised paper presented at the Annual Meeting KIM '82, "From Academic Research to Industry", Bandung, 16 June 1982. (published with permission).

**) National Institute for Instrumentation, Indonesian Institute of Sciences (LIN-LIPI).

programmes should be selected in such a way, so that the research and development output could be utilized by industry.

At present there is no single industry producing equipment or instruments in Indonesia. There is still lack of interest from the part of industry to produce equipment developed by the R&D institutes. The transfer of technology from the research and development institutes to industry is still limited, although such efforts have been made either by the research institutes or by the industry itself. Among the reasons for this are that the output of the research and development activities conducted by the research institutes are still in the form of "laboratory prototype" or "laboratory-scale", which needs further socio-techno-economic studies.

Industry is willing to invest their capital in producing something only if the "production-prototype" and its socio-techno-economic studies have been made. They do not want to take the risk in producing a new product where they still have to complete the feasibility-studies or any other further studies. There is at present a gap in the transfer of the output of the research and development from the research institutes to the industry concerned. (see Fig. 1)

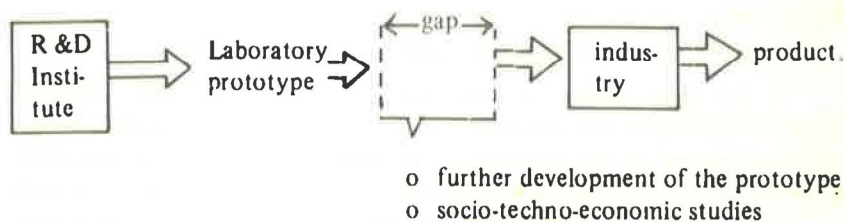


Fig. 1. The gap between the R&D institute and the industry.

To bridge the above mentioned gap some approaches could be considered. One approach is to establish or assign a body/institute which will:

- o further develop the laboratory prototype to the production prototype
- o carry out the socio-techno-economic studies prior to the establishment of a new industry
- o advise the research institutes in the further development of the laboratory prototype
- o market the "production prototype", so that it can be readily produced and be ready to be sold to the customer.

I believe that by having such a body/institute, there will be no more gap in the diffusion of the research and development output to the industry.

Another approach which could be taken to overcome the existing gap is by having a spin-off method. Part of the institute personnel is assigned to establish a small specific industry which is still in close relationship with the institute, with a specific task. By having several spin-off-industries the linkage between research institutes and industry could be established which enhance the transfer of technology. These spin-off industries could act either as the main industry or as supporting industries assisted by the institute. (see Fig. 2).

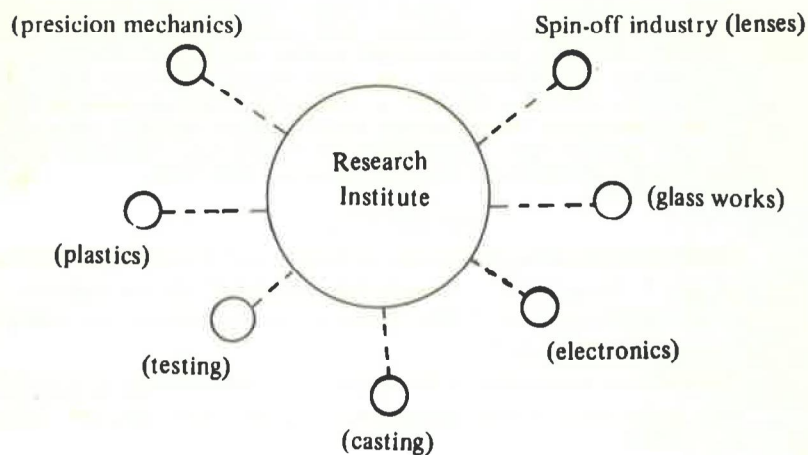


Fig. 2. Spin-off

CONCLUSION

The establishment of the linkage between the research institute and the industry is essential to enable the faster diffusion of the research and development outputs to industry.

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