

## **Technology and Skill Upgrading in Manufacturing Small and Medium Enterprises (SMEs) with A Reference to the Roles of Government, Large Enterprises, Universities and Public R&D Institutes: A Comparative Study Between Japan and Indonesia**

The main aim of this research is to examine the process of technological and skill upgrading in SMEs in Indonesia, and in Japan, as a developed economy where the industry, including SMEs, is more developed than in Indonesia. This research focuses on the roles of government agencies, universities and research institutes, vis-à-vis LEs as sources of technology and skill, either through provision of technical assistances, mobility of human resource, etc.

Studies on SMEs in developing countries with the same focus as that of this research are very limited. In Indonesia, research on development of SMEs with special focus on technology and skill upgrading, especially the role of government agencies, universities and public R&D institutes, as well as that of LEs through subcontracting and mobility of employees from LEs to SMEs is scarce.

The nature of this research is not to test or to examine empirically the correlations between phenomenon, but mainly to identify or to collect information on two things: (1) how are the roles of government, universities and public R&D institutes, and LEs on the transfer of technology and skills to SMEs in Indonesia and Japan; and (2) what are the main obstacles facing government agencies, universities, public R&D institutes, and LEs in playing that role in Indonesia. Thus, from this information, main differences between the two countries and hence key successful factors are identified. The main analytical tools used in this study are literature study, survey, focus group discussions, and indepth interviews.

This study shows interesting findings. First, business cooperation in any forms including subcontracting arrangements among firms, especially between SMEs and LEs in Indonesia is not so strong, certainly much weaker compared to Japan. Second, having subcontracting linkages with LEs is not the guarantee of successful transfer of technology from LEs to SMEs. Third, since the start of the new order era in 1966 up to the present day, almost all known types of government intervention to promote the development of SMEs have been tried at one time or another. However, the cost effectiveness of all these efforts is low due to the following main reasons. (1) the focus of government interventions towards SMEs has been too much on non-technical and skill aspects such as financing and marketing. (2) many programs did not meet the real needs of SMEs, and (3) lack of coordination among those agencies/departments in implementing the programs. Many SMEs are involved in more than one similar programs from different departments in different periods, whereas, on the other hand, many SMEs, especially outside Java have never attended any government sponsored programs because they never knew such programs exist; Fourth, the role of R&D institutions and universities in supporting SMEs especially in technology and skill upgrading is still weak.

Publication of the Results of Research Project:

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Presenter: Prof Dr Tulus T.H. Tambunan

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