THE ROLE OF UTM IN TECHNOLOGY TRANSFER

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Ringkasan

Di dalam proses pembangunannya, Malaysia telah mengimport teknologi dengan kadar yang tinggi. Tetapi pemindahan teknologi yang diimport belum lagi mencapai tahap yang diharapkan.

Di sini pengarang cuba mengenalpasti fakta yang menghalang pemindahan teknologi dan mencadangkan tugas positif yang dapat dimainkan oleh UTM untuk mengatasi masalah ini.

Perkara yang dibincangkan termasuk peringkat pengembangan teknologi, dan penubuhan sebuah pusat teknologi di UTM.

Abstract

In the process of development, Malaysia has been importing technology in massive proportions during the recent years. But it is reported that the extent of transfer of the imported technology to form Malaysia's own technology is far below the target of expectation.

In this paper, the authors have tried to identify the problems which are hindering the expected technology transfer and suggested a positive role that UTM can play in overcoming these problems. The different stages in the process of technology development have been discussed and the establishment of a "technology centre" in UTM having multifunction activities contributing to the transfer of technology has been emphasized.

1. Introduction

In the process of development, Malaysia has been importing technology in massive proportions during the recent years. But it is reported that the extent of transfer of the imported technology to form Malaysia's own technology is far below the target of expectation. It is therefore considered worthwhile to look into the problems which are hindering the expected transfer and to consider the possible solutions.

We all know that Japan, a developed nation today, got her first technology from the west. Having obtained it, she adapted it to suit the local conditions and gradually improved upon it. This is how Japan's own technology has developed. The same process could be applied to Malaysia or any other developing country. But Japan has several strong points to her credit, namely, right attitude, motivation, team work and life-long employment system which are essential factors for technology development. Unfortunately, most of the developing countries including Malaysia are lacking these essential factors, which may be considered as a significant drawback in the process of technology transfer. However, there have to be some ways and means to overcome the drawback without sacrificing the social and cultural heritage of a country.

What Malaysia needs today is perhaps to import the right type of technology, to adapt it to the local conditions and to develop it further within the shortest possible time. In this process, a tertiary institution like UTM could possibly play an important role, especially in adaptation and development of technology.

2. Technology Development

The process of technology development may be divided into three stages, viz, primitive, moderate and advanced. In the case of shipbuilding as an example, primitive stage can be defined as labour intensive phase, moderate stage as capital intensive phase and advanced stage as technology intensive phase. The technology gap between primitive stage and moderate stage is not so big. Therefore, the technology transfer between these two stages is rather easy to achieve. On the contrary, transfer of technology from moderate stage to advanced stage is quite difficult because of radical technology gap between the two. In this case, the technology involved is not the extension of the traditional one, but an innovation against the existing one.

To explain the matter more clearly, let us look at the history of development of "Mould Lofting" in recent years. In the late 50s, "reduced scale" lofting technique was introduced together with optical cutting machinery. It was the sign of the opening of a new era, and together with the introduction of various mechanised and automated production facilities, shipbuilding technology was converted into the capital intensive phase. However, "reduced scale" lofting, in principle, was nothing but an extension of the century old "full scale" lofting technique, because the curved surface of the ship' body was represented geometrically in both the cases.

With the application of computer in recent years, especially in the field of numerically controlled machinery, surface of the ship's body has to be expressed by mathematical method. In other words, the century old analogical way of expression was discarded, and an entirely new digitalized way of expression was introduced. Needless to say that for the successful application of computer, various supporting software had to be developed and from this aspect, the application of computer in "Mould Lofting" can be considered as technology intensive in nature.

The demand of technology transfer in an industry is originated by commercial needs, since the higher grade technique is, in most of the cases, more efficient and economical than the old technique. However, in the case of technology transfer of advanced phase like computer application in lofting, the investment required is rather high, and the small scale industry cannot withstand against this heavy capital requirement although the technical advantage is clear. To overcome such difficulties, the formation of a common use "technology centre" to provide the benefit of advanced technique would be one of the feasible solutions, and UTM may perhaps come forward to establish such a technology centre in Malaysia. No doubt the main functions of the technology centre would be adaptation and development of new technologies, it will also help in preserving the traditional technology of primitive and moderate stages which may be needed by some industry some day for economical reason.

3. Possible Functions of the Technology Centre

In Malaysia, a total of twenty five R & D institutions such as SIRIM, PORIM, RRI, MARDI, etc., have been established. These R & D institutions have fine standing in their own right and have been contributing to the development of appropriate technologies in Malaysia. The proposed technology centre of UTM should also be able to make positive contributions towards this end if its projects are designed to complement those of the existing R & D institutions. The possible functions of the centre in specific terms are enumerated hereunder.

3.1 Assisting to identify the relevant technology.

The technology centre may cooperate with the existing industry groups and associations to:

— identify problems specific to an industry sector for which technology forms part of the solution,
— assist in technology implementation,
— provide intelligence to industry sectors about technologies with potential impact to that sector.

3.2 Creating new product opportunities

The centre may utilize the resources of the entire University to take innovative ideas, both from within the University and outside it, to a point where they have commercial potential for Malaysian industry. To carry out this task, the centre requires to:

— develop the idea to prototype stage,
— conduct market analysis,

— provide legal and patenting advice,
— make business assessment.

3.3 Providing R & D facilities for industry

As mentioned earlier, the local industries, especially the small scale ones, are unable to make investment for R & D facilities. The technology centre can make available both staff and equipment to those industries on a fee-for-service basis. This activity may generate enough fund to make the centre self-supporting in the long run. The R & D activities should also include demonstration to the local industry how to adapt and use the new technologies.

3.4 Providing continuing education & training courses

The rapidly changing nature of technology in industries means that engineers/technicians have to take part in the life-long learning process. The technology centre can make significant contribution in this respect by offering continuing education & training courses in the three general areas as follows:
— the new technologies,
— the new management techniques,
— refresher courses from the traditional engineering curriculum.

As a part of this activity, the centre may also introduce "distance learning" to widen the scope throughout the whole country including East Malaysia.

4. Conclusion

Being the only one university of technology in Malaysia, UTM must continually develop its interaction with the local industries and help them to overcome the problems related to technology transfer which is considered possible through the establishment of a "technology centre" as detailed in the preceeding sections. While the educational role of UTM is of fundamental importance, the technology interaction programmes are also of significant importance to the industrial and service sectors. They also have a key role in determining the quality of this institution of higher learning.

References

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