

before. The general conclusion is that they often cannot do much. Government may be effective to a certain extent at a very low level, but not as a major movement. One example from the United States is the National Aeronautics and Space Administration (NASA). NASA established an elaborate system to transfer space technology to industry. It is generally agreed that the outcome from this technology transfer system was rather disappointing. Similarly the German government organized a system for transferring technology from institutions and large industry to smaller companies. The German government published extensive reports and had the information widely disseminated. A lot of money was spent on the program but the outcome, again, was not very favorable.

The reasons why these forced and formal technology transfer systems do not work are complex. First, the smaller companies often have limited technical resources as well as financial reserves. The technology, almost without exception, needs a major adaptations and the large costs of development are not available to the smaller firms. In addition, the major expense related to technological innovation is bringing the product or process to market and that must be borne solely by the firm which has acquired the new technology.

Another difficulty of these formal technology transfer systems is that smaller companies often do not know the procedures which they have to apply in order to work with governments. These procedures are often very complicated, expensive and time consuming. On the other hand, larger companies may have set up management teams who understand the procedures and they learn how to work with the government.

In Japan and other countries as well, the government sector is not experienced or motivated to understand marketing activities. On the other hand, the private sectors will often invest the same amount of energy and funds into marketing (and often more) than they do in research and development. In the government sector, most of the technological efforts go into R & D and none goes into marketing. Government products and processes are often "technology push" with all of the inherent dangers that have been found in previous research on innovation. It is not unusual for a completed product funded by the government to be unable to reach an appropriate market. We therefore see the absolute necessity of government to use industry in appropriate