9. Primary research potentials as a necessary condition for research success

9.1 A taxonomic approach

Having identified primary research potentials it is important to ask which of these are necessary conditions for securing company success, and in what combination they should appear. Discussion of necessary conditions for research success does not make much sense if a company only occasionally engages in research: it would then be unlikely that technology managers are cognizant of the need to develop a special research management approach. Supporting this assumption is an observation by Eggers (1997, p. 9). He was unable to discover relationships among variables that explain research functions, communication activities, research success, etc. for a sample including firms with relatively low and relatively high research expenditures. Once he concentrated on those firms having relatively high research expenditures, he was able to support a large number of plausible hypotheses. Although the high spenders had not all adopted identical behaviors, certain common traits could be established. This was not observed for the 40% low spenders in the sample.

Concentrating on the necessary conditions, it becomes obvious that these cannot be defined for research alone. The recipients of the new knowledge, the divisions or departments that are organized further 'downstream' in the flow of the new knowledge, need to be receptive to it. That is, they need to build up their own potentials. This is nicely illustrated by John Armstrong of IBM, who asserts that "we ... all agree that success in R&D is not enough to guarantee the success of individual firms. This remark is an important part of the context for any discussion of the future of industrial research. It reminds us that we must always keep in mind the many factors other than R&D that are necessary for success and that, if done in a first-class way along
with effective R&D, will be sufficient to assure success" (Armstrong, 1996, p. 151). Here, we shall address the marketing potential (MA) as an example of other 'downstream' potentials. Whether this potential is created exclusively within a firm or by different forms of alliances, cooperations, etc. should not be of concern in this context.

Furthermore, the relative technological position of a firm vis-à-vis its competitors, established by means of past investments in research and development or by past successes in identifying and transferring new technological knowledge into the firm and keeping it accessible, contributes to understanding necessary conditions for research success. To illustrate only a single point: if the relative technological position (TP) is strong, the firm does not suffer too much from a weak identification potential and/or a weak absorptive potential in the present period of time.

To somewhat reduce the burden of further analyses, we merge the creative potential and the interpretive potential into one, namely an inventive potential (IP). The other primary potentials are used as defined above. We thus arrive at six elements that influence necessary conditions for research and business success:

1. The relative technological position (TP)
2. The identification potential (ID)
3. The absorptive potential (AP)
4. The inventive potential (IP)
5. The internal transfer potential (IT)
6. The marketing potential (MA)

In order to further restrict our discussion it is helpful to assume that each of these elements occurs only in one of two possible states: it is either present (1) or it is absent (0). In reality, we may observe varying degrees of presence of each one of the elements. To illustrate: if one is aware that the technologies being employed have a very weak science base, then a low identification potential is sufficient; if there are indications of a strong science base, this needs to be reflected in a strong identification potential. This idea is taken up in more general terms in section 9.4, below. Presence or absence of any of the elements is considered as a characteristic of a laboratory, not of an individual. We do not believe that one person could represent all potentials at the necessary level. Rather, we assume that a laboratory can obtain the desired levels of potentials by carefully observing among its personnel individual strengths to develop particular poten-